DOCUMENT RESUME

ED 241 538 SP 024 077

TITLE Academic Learning Time in the District of Columbia Public Schools.
INSTITUTION District of Columbia Public Schools, Washington, D.C. Research Information Center.
PUB DATE Sep 83
NOTE 134p.; Papers presented at the Annual Meeting of the American Educational Research Association (Montreal, Canada, April 1983).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS *Academic Achievement; Change Agents; *Classroom Techniques; Elementary Secondary Education; *Program Evaluation; *Program Implementation; Teacher Behavior; Teacher Effectiveness; Teaching Methods; Time Factors (Learning); *Time on Task
IDENTIFIERS *District of Columbia

ABSTRACT

Papers generated for a symposium entitled "Effectiveness of Stallings' Use of Time Training for Teachers in Washington, D.C." are presented. The intitial presentation, "Academic Learning Time: The Current Status of the Stallings Training" (Geraldine Williams Bethune), reviews the Stallings research and describes the Academic Learning Time (ALT) program in the District of Columbia. In the paper, "The Complexity of Institutionalizing a Program: Acquisition of Training, Observing, and Computing Capability," Merle M. Bush provides information on logistics, budget, personnel, time frames, and other requirements for implementing a program of this scope and depth. The report "Does Time-on-Task Work for Teacher Training Too?" (Sarah Lee Anderson), discusses findings from observations made of teacher training workshops. Carolyn A. Thieme-Busch and Sukai Elie Prom describe their findings in "Impact of Teacher Use of Time Training on Student Achievement." A brief critique of the Montreal Symposium, by H. Jerome Freiberg, concludes the presentations. (JD)

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ACADEMIC LEARNING TIME

in the

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Presentations given at the Annual Meeting of the American Educational Research Association in Montreal, Canada, April 1983.

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ACADEMIC LEARNING TIME
in the
DISTRICT OF COLUMBIA PUBLIC SCHOOLS

Floretta Dukes McKenzie
Superintendent of Schools
Chief State School Officer

September 1983

Presentations given at the Annual Meeting of the American Educational Research Association in Montreal, Canada, April 1983.

Cover picture courtesy of the American Educational Research Association
1983 Annual Meeting Program

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** ** ** ** ** ** ** ** **

Introduction

Academic Learning Time (ALT) was introduced to the District of Columbia Public Schools in School Year 1981-82 as a recognized exemplary program for training junior high school teachers in the effective use of time in their classrooms. ALT is now a major component of a systemwide program known as Intensive Junior High School Instruction (IJHSI). The ALT training component is based upon a program, "The Process of Teaching Basic Reading," developed by Jane Stallings, Director of Jane Stallings Enterprises, Inc. of Nashville, Tennessee.

The Stallings program builds upon the initial work of the Beginning Teacher Evaluation Study in California, but tailors the research and training to the instructional needs of junior high school teachers. It has been validated as an exemplary program by the Joint Dissemination Review Panel and is made available through the National Diffusion Network and our local dissemination program, the District Facilitator Project, directed by Susan Williams.

With the help of Ms. Williams, contact was made with Dr. Stallings in 1981 at the Annual Meeting of the American Educational Research Association held in Los Angeles, California. At that time, in an initial planning meeting, the process by which the program could be initiated in the District of Columbia Public Schools was outlined. In Spring 1981, with a small grant from the National Institute of Education and additional support from the major offices, regions, and junior high schools, the program was begun with an awareness session for the principal and one teacher from each school housing junior high school students. The awareness session was conducted by Ward Ghory of the Cincinnati Public Schools.

During the fall of 1981, six observers were trained to conduct the required classroom observations by a consultant, Georgia Mohlman Sparks, from the Stallings Teaching and Learning Institute. From November 1981 through January 1982, twenty-nine teachers from junior high schools representing all four regions of the city were trained in effective classroom management and instructional practices. Their instructors were trained by Roberta Riley Devlin-Shearer, a professor from the University of North Carolina.

As an indication of the success of the program, a proposed symposium describing the ALT program was accepted for presentation at the April 1983 Annual Meeting of the American Educational Research Association in Montreal, Canada. The symposium was entitled, "Effectiveness of Stallings' Use of Time Training for Teachers in Washington, D. C."

The initial presentation in the syposium was given by Geraldine Williams Bethune who reviewed the Stallings research and described the ALT program in the District of Columbia. For persons interested in how such programs become implemented, Merle M. Bush provided information on logistics, budget, personnel, time frames and other requirements.

Tape recordings were made of the training sessions which provided valuable information on what training techniques seemed most effective. They also provided an opportunity to study four different methods for analyzing training techniques. The results of this study were reported by Sandra Lee Anderson.

A crucial question for any program concerns its impact on student achievement scores. The scores of the students of teachers who participated in the program were studied by Carolyn A. Thieme-Busch and Sukai Elie Prom. Ms. Thieme-Busch described their findings in the symposium.

Following the presentations, the discussant, H. Jerome Freiberg, professor at the University of Houston and editor of the Journal of Classroom Interaction, critiqued the presentations. The text of the presentations and Dr. Freiberg's critique are bound in this volume.

Making a presentation at the American Educational Research Association's international meeting was an honor and a recognition of the accomplishments of the District of Columbia Public Schools.

J. Weldon Greene

ACADEMIC LEARNING TIME

THE CURRENT STATUS OF THE STALLINGS TRAINING

Geraldine Williams Bethune

DISTRICT OF COLUMBIA PUBLIC SCHOOLS

Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada, April, 1983

ACKNOWLEDGEMENTS

Professional Support and Guidance

William H. Brown
Annabelle F. Strayhorn

Program Support

J. Weldon Greene
Roger J. Fish
Sandra Lee Anderson

Administrative Support

Sonya Carroll
Arlene Eddy

ACADEMIC LEARNING TIME: THE CURRENT STATUS OF THE STALLINGS TRAINING

The purpose of this paper is to review the current status of the Stallings training, Academic Learning Time (ALT) in the District of Columbia.

The research cited is a compilation of research materials provided by the Jane Stallings' Teaching and Learning Institute and the District of Columbia Division of Program Development.

The research on effective instruction is important as an initial topic of the training model. As the training evolved this research proved to be vital as a reference base during problem solving discussions. The research also served to raise the teachers' awareness of the research and their own teaching behavior.

The research findings on effective use of time is germane to the history of Stallings training because these findings provided data and guidelines for developing the teacher effectiveness training model.

TIME ON TASK OBSERVATION STUDIES

In an effort to identify effective methods to teach basic skills, quite a lot of classroom observation research was funded during the 1970's. There was a reasonable pay off from this investment. Fisher, et al., established that in classrooms where more time was allocated to academic pursuits, students showed more gain on academic tests. Further, in classrooms where students spent more time engaged in appropriate learning tasks, more progress was made. Stallings, Fairweather and Needels (1978) pressed these ideas further and found that in secondary basic skills classrooms, effective teachers spread the available time over several activities, were interactive with students, and provided a supportive environment. In such classrooms, students were on task more often. Research by Evertson and Emmer (1980) has indicated that those teachers who make it crystal clear on the first day of school what is expected in terms of assignments and behavior have more smoothly running classrooms. They were found to spend less time on organizational or behavior problems throughout the year.

THE BEGINNING TEACHER EVALUATION STUDY

Another good source of research-based information on instruction is the Beginning Teacher Evaluation Study (BTES). This study resulted in some specific findings that can guide instructional planning.

1. Multi-year research program on teaching effectiveness (1972-1978)

   - done by Far West Labs for the California Commission for Teacher Preparation

   - purpose - "to identify classroom conditions and teaching activities that foster student learning"

2. Resulted in a model of instruction called Academic Learning Time (ALT)

   - empirically evaluated over a 4 year field study (in classroom with experienced teachers)

3. ALT - "Academic Learning Time - amount of time a student spends engaged in an academic task that the students can perform with high success."

Most school administrators today were trained during the period from the 1940's, 1950's and through the 1960's. Their formal education did not provide methods for solving the combinations of contemporary educational problems.

The secondary teachers prepared to teach basic skills are few, because the preparation focus was subject content and curriculum. A study by Stallings and others, indicated that only 20 percent of the secondary teachers assigned to teach basic reading skills had been trained to teach reading.

Research on teaching in the 1970's suggests that teachers should allocate more time to academic subjects, by ability levels and students should be kept engaged in the tasks. There is a need beyond this recommendation with specific statements about how to engage students and how to use academic time. There is also a need to study the activities that occur within a class period and see how the time for those activities is distributed. During a class period, how long does it take to get the class started? How is class time distributed for silent reading, written assignments, reading aloud and instruction? Does the distribution of class time across activities make a difference and does this difference vary among students with different reading levels?

Funding was provided in the 70's to isolate effective strategies to help low secondary student achievers succeed.

As a result of these studies several variables emerged for consideration by persons concerned with improving academic achievement for today's students. The variables include clarity in first-day organization and planning; the element of time and students on task; school policies related to effective instruction in basic skills; and staff development.

Researchers observed teachers in samples of classrooms and identified how these teachers organized their work and how they spent their time in classrooms where students made achievement gains. The sections following, report findings from studies of secondary classrooms and schools.

CLARITY IN FIRST DAY ORGANIZATION AND PLANNING

There were 102 junior high school English and Mathematics classrooms studied in research by Carolyn Evertson, (1979). The study focused upon the first day organization. Findings indicate that during the year in classrooms, where there was less student misbehavior and more student gain:

1. Teachers made rules, consequences and procedures clear on the first day.

2. Teachers established a system of student responsibility and accountability for work on the first day.

3. Teachers were skillful in providing information and instruction.

4. Teachers were skillful in organizing several instructional activities.

THE ELEMENT OF TIME AND STUDENTS ON TASK

A number of instructional strategies that are effective in teaching basic skills in secondary schools were highlighted in a study by Stallings, Cory, Fairweather and Needels (1979). Inclusive are management of class time, interactive instruction and focus of instruction.

MANAGEMENT OF TIME

The range of length of class periods in 14 schools was from 40-55 minutes. Secondary students reading at the 1st to 4th grade level achieved level gain up to two grade levels in one school year. Time was distributed in the manner below:

- Instruction-giving examples, explanations linking to student experiences 16%
- Review, discussion of seat work and story content 12%
- Drill and practice to help memorize 4%
- Oral Reading in small groups 21%
- Silent Reading 9%
- Written assignments 4%

Allocation of percentage of time to each of these activities varied across classrooms according to the achievement level of students. Oral reading was supportive for the low achieving students, but not so important for students achieving above the 4th grade level. Secondary students' comprehension scores are often lower than their vocabulary scores. Oral reading permits the teacher to hear the students reading problems, ask clarifying questions, provide explanations to help students comprehend new words, and link the meaning to students prior experience or knowledge.

In classrooms where students spent more time on written assignments (28%) and silent reading (21%) slight or no gain was made.

There were less occurrences of active instruction, discussion/review and drill/practice. Student misbehavior occurred more often in these classrooms. Because students with reading problems are likely to have shorter attention spans, student opportunity for involvement in several activities during class period seemed to help these students stay on-task.

INTERACTIVE SUPPORTIVE INSTRUCTION

During the study of how teachers allocated time to various classroom activities, it became clear that teachers who were interactive in their teaching style had students who achieved more in reading.

This interactive style included providing oral instruction, instruction for new work, discussing, and reviewing students' work, providing drill and practice, asking questions, acknowledging correct responses and supportively correcting wrong responses.

Interactive instructional style provided the following strategies:

- Oral instruction for new work, discussing and reviewing students' work
- Drill and practice
- Asking questions
- Acknowledging responses
- Supportively correcting wrong responses

The effective teachers solicited responses from particular students, rather than volunteers because this strategy provided greater equal opportunities for many students to become involved.

Questions directed to individual students should be at a likely success level for that student. If the student response is incorrect, the instructor should rephrase, probe and give clues to elicit a correct answer. It is important for the student to experience success. Research indicates that wrong responses handled in a supportive manner are important because students thrive on successful experiences. Wrong answers provide opportunities for teachers to clarify and reteach.

Interactive instruction is important to other subjects, according to a study by Tom Good, 1980. Junior high school students achieved more in mathematics classrooms where teachers employed active instruction. From this study specific findings were as follows:

- Teachers made assignments and provided information in a clear manner.
- Teachers asked students appropriate questions and provided immediate feedback to student responses.
- Many teachers of general math classes are not active.

From a study of math classes in 11 schools, (Stallings and Robertson, 1979) found that:

- general math students were more often directed to do written workbook assignments
- general math students received less instruction or review of seatwork than geometry or calculus classes
- general math or pre-algebra students were significantly off-task
- Algebra II, geometry and calculus students were on task more often

An observation comparison of 11 teachers from this study revealed that the same teacher would display active instructional behavior with advanced classes and exhibit the opposite behavior with lower classes. Similar relationships occurred in general science and physics classes; the advanced classes received active instruction while the less able classes received workbook assignments.

Generally, individualized instruction has proved to be disillusioning. Funds and energy expended during the 70's for the development of programmed reading and science books did not result in expected student achievement. According to (Stallings, 1975; Stallings, Needels, and Strayrook, 1979) information provided to small groups of students with similar instructional levels accounts for some students learning. Conditions important for learning to occur are:

- students reading aloud
- students hear others reading aloud
- students hear others ask questions and respond

The above interactions were not provided by many individualized programs from the 70's. However, the opportunities above are possible in a group setting.

Sixty teachers attending a conference sponsored by the National Institute of Education in 1978 shared their experiences about individualized instruction. From this conference Amarel and J. Stallings reported that:

- most individualized programs relegated teachers as record keepers
- students need interactions with teachers
- teachers can provide concept development
- teachers can adapt instruction for the group

Research supports the finding that books or machines do not provide the type of interactive instruction students need. Instruction focused upon large or small groups 50 percent of instructional time proved to be more effective for student achievement.

INTENSIVE JUNIOR HIGH SCHOOL INSTRUCTION (IJHSI)

TEACHER TRAINING-ACADEMIC LEARNING TIME (ALT)

The ALT staff development model implemented in the District of Columbia utilizes research findings, content and a well developed delivery system developed with funds from the National Institute of Education. The early model research was conducted at SRI International in Menlo Park, California.

A multi-phase study was conducted in secondary schools to develop this model.

- Phase I — 45 secondary reading classes observed in six California school districts

  Purpose: To study relationships between teacher behaviors and students' gain in reading

  Results: Specific guidelines on efficient instructional strategies useful with secondary remedial students

- Phase II — Findings translated into workshop series

  Purpose: To train 47 teachers in effective use of time on-task

  Results: Treatment teachers changed behavior in recommended ways and their students made more gains in reading achievement than students from control group

- Phase III — Program developed to accommodate requests beyond trained staff available

  Purpose: To monitor trained teachers who served as teacher trainers

  Results: School districts acquired cadre of teacher trainers; a staff development of effective instructional practices

In the District of Columbia Public Schools in SY 1980-81, important research on the effectiveness of Academic Learning Time (ALT) was emphasized, with the introduction of Intensive Junior High School Instruction (IJHSI). The ALT emphasis is built upon the concept of Time on Task, that is, using time effectively in classrooms. The more minutes a day a student spends seriously attending to his or her work, the higher the achievement of that student.

Early during SY 1981-82, four regional supervisors and two persons from Central Administration and Division of Program Development and Planning were certified as observers by the Jane Stallings Institute.

Twenty-eight junior high school teachers successfully completed an in-service course entitled, Theory and Classroom Application of Academic Learning Time. At the beginning of teacher training, classroom observations are conducted during which data is collected on the number of times the teacher and student interact according to usual classroom patterns. A computer analysis of this data is utilized to produce an individual teacher profile showing the amount of time the teacher spends on each of approximately thirty variables.

Teachers review their profiles, they make individual decisions about which variables they will develop in their classroom.

From the first group of teachers trained, there were 11 variables identified where more than two-thirds of this group were told to modify behavior more or less in the classroom.

The teachers meet once a week for two and one half hours for five weeks. The workshop topics for teacher training are:

Workshop I	Introduction, Research Findings on Effective Use of Time and Analysis of Profiles
Workshop II	Improving Classroom Organization and Grouping
Workshop III	Improving Interactions
Workshop IV	Improving Behavior Management
Workshop V	Improving Instruction and Monitoring

The groups are small, about six teachers to each trainer. Open discussion about problems with students, difficulties encountered with certain techniques, or necessary adaptations to the research is a vital part. At the end of the training, teacher post observations are conducted. Teachers are given their computer profiles showing progress of student ALT in the classroom.

This model for training teachers in Using Time Effectively in the Classroom (ALT) is brought to the DCPS by the District Facilitator Project, which means that it has withstood a rigorous evaluation and has been shown statistically, to result in high achievement scores for students whose teachers have participated in the training. Individual regional offices, Staff Development and the Division of Program Development and Planning cooperated with the project.

EFFECTIVE USE OF TIME PROGRAM

The practical application of theory and use of skills allows us to evaluate what works in different situations. People learn by doing and adjusting what they know to new situations. You cannot learn by doing if you do not do it. In our model we consistently use the teacher's experience in a large sense, that is our curriculum. We must get a commitment from teachers to try some new strategies each week and then report successes and problems during class meetings. Learning by doing is a cornerstone in our model.

Another cornerstone is based upon the theory that people only learn useful information or gain new skills when they can link the new with the known.

Some cognitive psychologists suggests that learning only takes place when connections are made between a person's prior knowledge and the new information. This indicates starting where the learner is for training.

In order to determine the learner's present knowledge and skills, we use objective observation as a measurement tool (SOI). We utilize this tool to define the teacher's performance on the variable defined, in the Effective Use of Time Program. With this specific informatin we can identify each teacher's strengths and problem areas. With this information we start where the teacher is and link new strategies to the existing framework.

PROBLEM SOLVING

Problem solving as a group is another feature of our model. This is based upon the theory that a group of people can make rational decisions if the following conditions are met:

1. define the problem
2. generate solutions
3. forsee consequences
4. come to solution

5. try it

6. evaluate outcome

7. start over

This is a solution oriented model; it is important that all participants share ideas, that all ideas are respected and that no one monopolizes the time. Role playing is valuable as a technique in problem solving. The problem solving process takes the burden from the trainer as having all the right answers.

Later in the spring of SY 1981-82 fourteen additional observers were trained by the three regional supervisors previously certified as observers. The previously trained supervisors were certified as observer trainers by the Jane Stallings Institute.

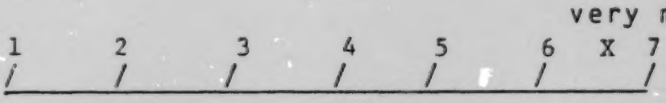
FOLLOW-UP EVALUATION OF ALT TRAINING

Teachers trained in Academic Learning Time between November, 1981, and January, 1982, were asked one year later in January, 1983 to complete an evaluation questionaire about their experience, confidentially was assured. This report is a summary of their responses. Twenty of Twenty-nine responded.

Questions 1 - 4 and 6 were designed with a Likert-type scale as illustrated by Question 1 below:

1. Do you think about ALT concepts as you teach and plan?

very little — very much



Approximately half of the teachers marked between the indicated numbers as shown by the "x" above. Since there was no way to know if the teacher meant to indicate a 7, 6½, or 6, values marked between the numbers were assigned the mid-values, such as 6½, 5½, etc.

By content area, the teachers represented the following subjects:

English	3 teachers
Reading/transition	4 teachers
Science	5 teachers
Mathematics	6 teachers
French	1 teacher
Social Studies	1 teacher

English and reading will be reported as one group, and French combined with social studies. By subject area, the teachers gave the following average scores to the stated questions:

1. Do you think about ALT concepts as you teacher and plan?

English/Reading	6.1	(1 = very little, 7 = very much)
Science	6.2	
Mathematics	5.9	
French/Social Studies	6.0	average = 6.1

2. How much do you see ALT in your classroom?

English/Reading	5.9	
Science	6.0	
Mathematics	5.8	
French/Social Studies	5.5	average = 5.9

3. In your opinion, how much has your ALT training helped in your students' achievement this year?

English/Reading	6.1	
Science	6.2	
Mathematics	5.8	
French/Social Studies	6.0	average = 6.0

4. How appropriate was ALT training to the Junior High School Level?

English/Reading	6.2	(1 = not appropriate, 7 = very appropriate)
Science	6.2	
Mathematics	6.0	
French/Social Studies	6.0	average = 6.3

5. How appropriate was the ALT training to your subject area?

English/Reading	6.9	
Science	6.3	
Mathematics	5.8	
French/Social Studies	6.0	average = 6.0

The scores are generally very high, averaging around the next-to-highest category of 6.0. On questions 1-4, the science teachers were most enthusiastic about the program, followed by the English/reading, then French/social studies, and then mathematics teachers.

In terms of appropriateness to subject area, the English/reading teachers found it most appropriate, followed by the science, then French/social studies teachers. Mathematics teachers had the most doubt about the appropriateness of the training, but scores are still relatively high.

Question 7 asked teachers to rank the five topics of the training workshops according to how useful those topics were found to be. The overall ranking of all teachers was:

most useful:	1.tied	Classroom Management Feedback and Direct Instruction
	2.	Behavior Management
	3.	Strategies for Teaching Reading
least useful:	4.	Overview of the research

This ranking was ascribed to by the teachers in their content areas with the exceptions of English/reading teachers who placed Strategies for Teaching Reading above Behavior Management, and French/social studies teachers who exchanged Behavior Management and Classroom Management.

Interestingly, the three topics marked most useful were those taught in the last three sessions of training, which may have had some effect.

Teachers were asked two open-ended questions for their candid responses. Questions #8 asked, "What ideas from training did you find most helpful?" The responses, by subject area follow:

English/reading

"The feedback from the observation of my classroom behavior and its analysis directed my attention to the area I needed to strengthen."

English/reading (continued)

"Keeping all students 'on-task', sharing classroom management techniques"

"Strategies for remaining 'on-task' were most helpful."

"(1) Classrom management, (2) behavior management, (3) planning,"

"Time allottment for specific instruction and formulation of direct questions as a way of involving students."

#8. What ideas from training did you find most helpful? (continued)

Science

"Teacher interaction with students is important in terms of student learning as well as classroom management"

"Feedback and direct instruction"

"Making good use of teaching time. Continuous interaction between students and teachers"

"How to spend my time more wisely to plan, organize"

"Effective use of every minute"

"Feedback"

Mathematics

"I discovered that I was not using all my class time effectively (instruction)"

"Classroom management and behavior management"

"Keeping class in motion (making sure that every minute was used wisely). Method of classroom management (no more headaches)."

"The feedback from observation made of my classes was most helpful. Discussing of brainstorming with other teachers helped. The results from the study presented to the D. C. teachers has had a great effect on my planning (lesson) and how I teach."

French/social studies

"(1) Consciousness of loss of academic time (potential loss); (2) staying on task (awareness of off-task tendencies); (3) the importance of instilling positive attitudes with praise, etc."

"(1) Redirecting questions back to the first student who did not know when he was first asked, (2) using as much time interacting as possible, (3) the importance and use of oral reading, (4) the importance and learning resulting from guided student interaction."

For item #9, teachers were asked to offer their comments. These follow:

English/reading

"Please give a little more in-depth training to those teachers who have taken the orientation course before you involve more teachers."

"There should have been more follow-up by the persons who were responsible for seeing that the teachers used the strategies."

"This is a good course, and more teachers should get the opportunity to participate in it."

"The course is very useful as designed -- especially helpful was the sharing among teachers."

#9 Please offer your comments: (continued)

Science

"Extention of classes for other teachers"

"Thanks ALT"

Mathematics

"I found my ALT training most helpful and hope you will consider other training this summer -- not in January."

"This class or course should be given to each teacher. I would highly recommend this training. (Being able to take 45 minutes in a class and produce 2 lessons in a period is great.)"

French/social studies

"The implementation of ALT in a classroom brings life into teaching as well as marked improvement in student achievement."

"ALT should be required of all entering teachers into the system or required for recertification. ALT has helped as much as I have used it. I am working on 100% usage.

In summary, the teacher responses to training they received a year ago are overwhelmingly positive and quite encouraging. The only comments which did not recommend extending the program to other teachers requested more training and follow-up. The teachers' use of last year's training with students this year, is remarkably high -- averaging 6.0 on a 7 point scale. All subject area teachers found it appropriate to their subjects, with the mathematics teachers having the greatest doubt (but still rating 5.8).

Teachers appreciated the classroom management, feedback and direct instruction, and behavior management topics the most. They also cited the usefulness of the classroom observation results, and the sharing of experiences with other teachers. The idea from training that teachers mentioned most frequently as being helpful was the effective use of time, or time on task, which is what the program was all about.

Presently, SY 1982-83, thirty-eight additional teachers have completed the in-service course, "Theory and Classroom Application of Academic Learning Time." The teachers represented 8 junior high schools.

In February, 1983 three additional regional Administrators were trained as observers.

In March, 1983 nineteen more teachers from 7 schools, junior and senior high levels began ALT training. This is the most current status of the Washington, D.C. ALT model.

NOTE: About the D.C. ALT model:
The D.C. model did not utilize teachers as observers. Administrators and instructional support staff conducted pre and post intervention observations.

REFERENCES

Amarel, M., and Stallings, J., "Individualized Instruction", In Perspectives on the Instructional Dimension Study. Washington, D.C.: National Institute of Education, 1978.

Evertson, Carolyn, Differences in instructional activities in high and low achieving junior high classes. Paper presented at the Annual Meeting of the American Educational Research Association, Boston, April 1980.

Evertson, C. and Emmer, E., Effective Management at the Beginning of the School Year in Junior High Classes, Austin Texas. Research and Development Center for Teacher Education, University of Texas, 1980.

Tilby, N., and Cahen, L., Teacher behavior and academic learning time in the B.C. period. Beginning Teacher Evaluation Study. Far West Laboratories, San Franciso, California, 1978.

Fisher, C.W., Tilby, N.N. Marliaine, R.S. Cahen, L.S., Dishaw, M.M., Moore, J.E. and Berliner, D. Teaching behaviors, academic learning time and student achievement; final report of Phase III-B, Beginning Teacher Evaluation Study. Far West Regional Laboratory, San Franciso, California, 1978.

Good, T.L., The Missouri Mathematics effectiveness Project., Columbia, Mo.: School of Education, University of Missouri, 1980.

Stallings, J., Cory, R., Fairweather, J., and Needels, M., Early Childhood Education Classroom evaluation. SRI. International, Menlo Park, California, November 1977.

Stallings, J., Cory, R., Fairweather, J., and Needels., A Study of Basic Reading Skills Taught in Secondary Schools. Menlo Park, California.: SRI International, January 1978.

Stallings, J., Needels, and Staynook N., How to Change the Process of Teaching Basic Reading Skills in Secondary Schools. Final Report to the National Institute fo Education, Menlo Park, California.: SRI International, 1979.

Stallings, J., and Robertson, A., Factors Influencing Women's Decisions to Enroll in Elective Mathematics Classes in High School. Final Report to the National Institute of Education, Menlo Park, California.: SRI International, 1979.

Stallings, Jane A. The Teaching and Learning Institute, Specialization: Research on Teaching and Staff Development. Allocated Academic Learning Time Revisited, Or Beyond Time On Task. 409 Poppy Place, Mountain View, California, April, 1980.

Stallings, Jane A. The Teaching and Learning Institute. What Research Has To Say To Administrators of Secondary Schools About Effective Teaching and Staff Development. 409 Poppy Place, Mountain View, California July 17, 1981.

THE COMPLEXITY OF INSTITUTIONALIZING A PROGRAM: ACQUISITION OF TRAINING OBSERVING, AND COMPUTING CAPABILITY

Merle M. Bush
District of Columbia Public Schools

Paper presented at the Annual Meeting of the American Education Research Association, Montreal, Canada, April 1983

ACKNOWLEDGEMENT

PROFESSIONAL SUPPORT AND GUIDANCE

Wilmer Wood
Barbara Clark
Brenda Richards

PROGRAM SUPPORT

J. Weldon Greene
Roger J. Fish
Sandra Lee Anderson

CLERICAL SUPPORT

Crystal Philyaw

INSPIRATION AND SUPPORT

Roosevelt Bush

THE COMPLEXITY OF INSTITUTIONALIZING A PROGRAM: ACQUISITION OF TRAINING, OBSERVING, AND COMPUTING CAPABILITY

NEED

A large percentage of junior high school students in the District of Columbia have been scoring below the national norm on the CTBS in reading and mathematics for the past few years. Although it has been the philosophy of the school system administration that all teachers are responsible for improving students' reading scores, teachers maintain that they are specialists in subject areas and are neither qualified nor trained to teach reading. With budget cuts and declining enrollments not all faculties include a reading teacher, and certainly not enough reading teachers to handle all students who need special assistance. The problem, then, was to provide training for junior high school teachers to improve student reading skills through the use of more effective instructional strategies.

Research conducted on the secondary level indicates that the process variable most often associated with student achievement is time on task. One conclusion from the research is that teachers need to be trained to employ techniques that are positively associated with increasing student time on task.

SELECTION OF TRAINING MODEL

The training model adopted by the District of Columbia Public Schools was the, "Process of Teaching Basic Skills in Secondary Schools", as developed by Dr. Jane Stallings. (This has become known in the school system as "Academic Learning Time", or simply ALT.) This model focuses on approximately thirty classroom variables which affect student achievement and measures the amount of time spent by the classroom teacher interacting with students on each variable. The Stallings Model was initially adopted because of its important role in the development of the Time on Task research. The model can be applied to the junior high school organization of classes by subjects and it addresses the need for raising student achievement through the improvement of teachers' skills. Another consideration in the selection of this particular model is the capability of expansion, pyramid style (satellite diffusion model), with minimal expense.

TRAINING MODEL

The training model instituted in the District of Columbia Public Schools consisted of four basic components:

- Observer training
- Observations of teachers (pre- and post-training)
- Training of apprentice trainers
- Teacher training

The instrument used for data collection was the SRI Secondary Observation Instrument.

OBSERVER TRAINING

Observer training, initially, was conducted for six District of Columbia Public School employees, including one instructional supervisor from each of the four regions, by a consultant from the Stallings Teaching and Learning Institute. This training, spanning seven work days, consisted of intensive drill and practice in coding teacher interactions in the classroom with the use of videotapes first and then actual classroom situations. Because of the nature of the system and the instrument used, speed, as well as accuracy, was essential. Observers must be able to code at least fifty interactions, or one every five seconds, in order for the FMI(Five Minute Interaction) to be valid. Participants were certified as observers only if they reached 85% reliability with the instructor/consultant in coding a timed videotape.

OBSERVATIONS

Following their certification observers were then ready to begin collecting data, through observations, on teachers who would participate in Phase I of the ALT Program. School principals had been asked to indicate their willingness to participate in the Phase I program and to identify teachers from their building to be trained. Eight teachers from each of the four regions of the school system were selected for the initial training. (Participating schools could have two teachers in the training program.) Each teacher in the program was observed in the same class on three different days, both before and after training. Observations were the responsibility of the regional instructional supervisor with some assistance from the other two trained observers.

THE OBSERVATION INSTRUMENT

The SRI Secondary Observation Instrument is designed to specifically record interactions of the teacher with the class and contains two major components, SNAPSHOT and FMI.

The SNAPSHOT is a thirty second scan of the entire classroom and is recorded before each of the five minute interactions (FMI). On the snapshot the observer looks at fourteen variables associated with the type of activity, materials used, grouping patterns, and with whom the teacher and pupils are involved.

On the FMI all interactions involving the teacher are recorded for a five minute interval five times during the class period. The observer codes as many interactions as possible, but a minimum of fifty must be recorded during the five minute interval. If an interaction continues longer than it takes the observer to

code a frame, the observer repeats the code every five seconds until it ends. During an observation the number of interactions recorded may vary from a minimum of 250 to a maximum of 360 with 300 being average for most observers. There are a total of 31 variables on the FMI. Variables on the FMI are classified as either:

- Academic statements
- Organizing/managing statements
- Behavior statements
- Social statements

Included are specific behaviors such as: direct questions, commands, open-ended questions, clarifying questions, direct instruction, response, no response, tests, correction, praise, reading aloud, written work, intrusions, monitoring.

During the coding of the FMI, the teacher is the center of attention and only interactions involving the teacher are recorded. Upon completion, the observation instruments, containing collected data, were sent for processing and generation of individual teacher profiles. (The observation profile contains the frequency of occurrence of each variable in the observed classroom. The snapshop profile contains the percentage of time spent in each variable. See Appendix B)

TRAINING--TEACHERS AND APPRENTICE TRAINERS

Teacher training was begun when profiles were completed and returned. The four supervisors who had served as observers now began training as apprentice trainers. This process was conducted by a consultant recommended by the Stallings Teaching and Learning Institute and consisted of a two and a half hour session two days per week for five weeks. The first session involved the consultant working with a small group of teachers while the apprentice trainers observed the proceedings. Following this session the consultant met with trainers for three hours to answer questions, clarify techniques or strategies, and to receive feedback. The second day the trainers worked with a small group of teachers from their respective regions using the same procedures and materials as observed at the first session. The consultant observed each trainer with his/her group of teachers and provided feedback following the session. All sessions were tape recorded for evaluation of effectiveness of topics discussed and to determine if there was a correlation between the time spent on a topic and teacher behavior on the post-training profile.

Teachers were trained, after school, in teaching techniques and classroom management strategies which have been proven to increase Academic Learning Time. Training sessions were conducted once a week to allow teachers to apply the ALT

techniques in their classrooms. During the sessions teachers openly discussed situations encountered in the classrooms and the effectiveness of the recommended strategies.

The course consisted of five workshops, one for each week of training.

Workshop I--Teachers were given an overview of the research findings which have identified those classroom variables that are effective in increasing ALT and student time on task.

Workshop II--Teachers were given their individual profiles prepared from the observations conducted in their classrooms. Teachers were then given a set of specific behaviors they should either increase or decrease based on whether the variable is positively or negatively correlated with student gain. (See Chart I) Teachers made a commitment as to which behaviors they would attempt to change during the week. Strategies for teaching reading in the content area and grouping techniques were discussed.

Workshop III--This workshop focused on specific suggestions for organizing and structuring classroom activities and how to manage time effectively.

Workshop IV--Recommendations for behavior management were discussed. Teachers suggested techniques for handling specific behavior problems and techniques for motivating students toward good behavior and achievement.

Workshop V--The direct approach to teaching, monitoring students' work, and effective feedback techniques were discussed.

Each teacher received a packet including reading materials and assignments prior to the sessions. Between sessions teachers recorded data and attempted strategies as indicated in the workshops. Feedback was given and discussed at the beginning of each session.

At the end of the five-week training, post-training observations were conducted. A final evaluation session was held during which teachers received their second profile. An analysis comparing the two profiles, pre- and post-training, was also provided for teachers. Improvements in behaviors which have occurred were indicated as well as areas on which work should be continued. Post-training profiles indicated whether or not recommended strategies had been successful in increasing time spent on processes positively related to student gain.

Teachers who participated in the training, because workshops were held after school, received two credits toward recertification. Below is the estimated time

spent by each teacher in all phases of the training.

TEACHER TRAINING--CLOCK HOURS

Pre-training observations in classrooms	3 hours
5 weekly training sessions @ 2½ hrs. each	12½ hours
5 hours/week implementing training strategies	25 hours
Additional homework	8 hours
Post-training observations	3 hours
Final evaluation session	2½ hours
Total	54 hours

The total time involved in the program may vary because of the length of the class period in a given school, however, most classes range from 40 - 55 minutes per period.

At the end of Phase I, the project can be continued and expanded with much less expense. Observers trained in Phase I can become certified observer trainers under the supervision of a consultant. This would mean that four to six times as many observers could be trained at the same time since each observer trainer could train six to eight new observers. Since the function of the observer is to collect data using the SOI, persons trained would have to be available to visit classroom teachers at scheduled periods.

Once profiles have been produced, teachers trained in Cycle I could possibly, under the supervision of a certified trainer, train other teachers. Again, the number receiving training during one cycle would increase because of the increase in apprentice trainers. As far as the training is concerned, the system instituting the program could become independent and could expand to meet the training needs of the system.

PLANNING GUIDE

Listed below are the activities/crictical tasks implemented in initiating the District of Columbia Public Schools training program and any related concerns and/or considerations.

Activities/Critical Tasks	Considerations/Concerns
• Secure trainer of observers	Observer trainer must be certified. (Stallings Institute could possibly provide a list of certified trainers.)
• Identify observers to be trained	Observers must be able to meet the reliability requirement as well as have the time flexibility to observe classroom teachers during specified periods.
• Secure trainer of apprentice trainers	Trainer must also be certified.

• Identify apprentice trainers	Apprentice trainers conduct training sessions with teachers. They must possess leadership qualities.
• Arrange facility, materials, and times for observer workshops	Training should be held in a school in which teachers are willing to be observed (as practice) by participants. Materials must be available when the workshop begins. This includes pens, SOI booklets, practice sheets, and videotapes.
• Identify teachers to be trained	Teachers selected for the initial training should possess leadership qualities since these teachers could be used to train others. Also, teachers must be willing to participate in training after school, possibly without compensation.
• Design evaluation	Observers, trainers, and teachers should be aware, ahead of time, of the kind of data which will be required or requested in order to complete the evaluation.
• Conduct training of observers	Training can be completed in a seven full-day period, however, other schedules can be arranged to meet the needs of persons involved.
• Conduct observations of teachers	Three observations on any one day is the maximum that observers feel can be handled efficiently. Certainly, no more than four should be scheduled. Observers must be in the classroom at the beginning of the class period.
• Prepare contract for scanning booklets and computer processing	This process can take months. The entire procurement process needs to be thoroughly investigated to ensure that proper procedures are followed and timelines are kept.
• Arrange facility, materials, and times for teacher/trainer workshops	Profiles should be available before the workshops begin. The facility needs to be available after school for two and a half hours two days a week.
• Notify teachers of workshop specifics	
• Produce teacher profiles	Allow at least four weeks for the profiles to be generated and returned, plus an additional week for analysis of variables which need to be targeted.
• Conduct training of apprentice trainers and teachers	This is a five-week workshop-two days/week.

- Conduct post-training observations of teachers; send for processing
- Produce teacher pre-post training profile analysis — Compare the two profiles to determine which variables show improvement and which need additional work.
- Conduct final evaluation session with teachers
- Evaluate the program
- Prepare final report — Decisions need to be made regarding the effectiveness of the training, the method of continuation or expansion, additional training of observers, cost-effectiveness, etc.

PROCESSING OF SOI BOOKLETS

Completed observation booklets were sent to INTRAN Corporation in Minnesota for optical scanning. INTRAN scanned the booklets generating computer tapes which were then sent to Stallings Teaching and Learning Institute in California. (See Appendix for addresses) The Stallings Institute processed the tapes and generated profiles for each observed teacher.

Because this process must be completed twice during each training cycle it might be possible to complete only one cycle in a school year.

FINANCIAL CONSIDERATIONS

Costs for instituting the program will vary with the number of teachers, observers, and apprentices trained. However, some basic costs for Phase I as incurred by the District of Columbia School System are delineated.

-Consultants (for observer and apprentice trainer training)
-Air travel to training site
-Ground transportation during training
-Hotel/Food

Materials

-SOI booklets; 6 per teacher and 3 per observer for training @ $1.50/booklet
-Coding pens (Stanford Sharp 3000, Project Chrome by Eberhard Faber, Diagraph Primiline) from $.59 - $.75 each

Processing

-Scanning @ $2.40/booklet
-Computer tapes, 2 @ $12/tape
-Postage, freight, packaging, and shipping
-Computer processing of tapes and generating of profiles $200 minimum charge(up tp 100 booklets); $1.50/booklet after the first 100

Based on expenditures incurred for observer training, the District of Columbia Public Schools costs amounted to approximately $400 per observer for the seven day training. These costs were underwritten by the District Facilitator Project, National Diffusion Network. Since the training occurred during the workday and the observers were not classroom teachers, no costs were calculated for observers' time. Apprentice trainer/teacher training costs were approximately $85 per participant.

If trained teachers are to serve as apprentice trainers during a second cycle of training, consultant fees are eliminated, but some compensation has to be considered for those persons. Suggestions include a stipend, compensatory time equivalent to six 2½ hour sessions, or some other appropriate incentive. A consultant will still be required if additional observers are to be trained. (Observers can become certified observer trainers by conducting a training session under the supervision and tutelage of a certified observer trainer.)

COMPUTING CAPABILITY (INSTALLATION OF COMPUTER SUPPORT SYSTEM)

Unless, or until, a school district installs a computer system capable of processing its own data, there will continue to be a financial obligation, increasing in proportion to the number of persons receiving training, attached to the implementation of the model. The optical scanner used by INTRAN to scan the booklets is an NCS 70/15; the program is on UNIVAC 90/80. The program is coded in 1974 ANSI Standard COBOL on an IBM 3033A Mainframe. The program is written in a top-down, structured design.

It is possible to purchase the magnetic tape containing the program along with a hard copy containing instructions to the programmer. In addition, the program to operate the scanner must be purchased in order to develop independent computer capability. Expenses could be shared by two (or more) school districts considering initiating the program.

Observation booklets would continue to be a "built-in" expense. It is, however, conceivable that other suitable instruments could be developed to meet the specific needs of a system. Careful considerations must be given to this attempt since a new instrument may invalidate the computer program.

PROGRAM CONCERNS

In the Stallings Model for Effective Use of Time Training, one area of concern is the observation instrument because of the vast amount of time required to collect the data using the instrument. This is particularly true if teachers from several different schools are involved in the training. Considering that most school districts can not afford the luxury of having full-time observers, other personnel will have to be trained as observers and arrange their schedules to collect the data during the specified time period. This schedule must accommodate additional assigned responsibilities. For best results, no more than four observations should be done in one day, and no more than three in succession. Because of the intensity of the coding, it is much less pressure on the observer if there is a break between observations.

Assuming that there are enough observers to collect data of teachers to be trained, there is still a problem in scheduling the observations simply because of the nature of the junior high school's daily operation. Schedules change without advance notice because of such activities as assemblies, fire drills, testing, field trips, etc. Since an observation should be at least a 35-minute period to complete the five FMI's, observations may need to be rescheduled if there is a special schedule at the school.

Ample time for processing of data must be included in the schedule of training. The turn around time (from shipment of booklets to INTRAN and return of booklets from Stallings Institute) is about four weeks. Since this procedure must be completed twice during a training cycle, two months of the school year will be spent in waiting for profiles of participants. Installing the computer capability within the school system should appreciably diminish the waiting time.

Using the apprenticeship method of training trainers requires two afternoons after school (one for observing the consultant, and one for training teachers under supervision of the consultant) and an additional half day for planning with the consultant. This would mean that the consultant needs to be available two days a week. It also means that there is a tremendous strain on the schedules of the trainers who have other assigned responsibilities.

Although the observation instrument requires that an observer record all interactions of the teacher with students indicating when the teacher moves to another student, there is no method of indicating how many different students are actually involved in the interactions. The interchanges during an observation could actually involve a very small number of different students interacting at different times during the class period. The results on the profiles would be no

different than if each of the students in the class interacted once with the teacher. The profile only indicates the frequency of interactions. Likewise, during the coding of the FMI, only teacher interactions are recorded. If there are students off-task--socializing, misbehaving, uninvolved--while the teacher is interacting with others, this does not show up on the profile. This type of activity is coded, however, during the Snapshot.

The model discussed here deals primarily with teacher behaviors in the classroom and should not be considered as the only type of observation or feedback that might be needed for a teacher. There must, at some point, be an analysis of the quality of interactions and a review of the content, materials, and techniques that are not coded on the instrument. For example, the instrument does not allow an observer to indicate whether or not the teacher summarizes the day's lesson, reviews the homework (unless it's being done during a Snapshot), states the purpose or the objective of the lesson, or relates the lesson to pupils' experiences. Also, there is no indication of the level of questions used in the lesson, or even whether or not the teacher is simply asking the same question of several different pupils.

In the District of Columbia Public Schools' ALT Program teachers from all subject matter disciplines have been included in the training. Although the techniques and strategies considered in the program have implications for all teachers, the analysis of the post-training profile does not necessarily show the desired changes in behavior as indicated on the pre-training profile. This is due largely to the nature of the subject being taught. In classes where pupils are expected to produce a product by the end of the semester (home economics, industrial arts, etc.), the teacher may spend the early part of the semester in direct instruction to a large group. When the pupils begin working on their individual projects very little whole group instruction takes place and the teacher spends the majority of time with individuals as needed or simply monitoring pupils' work.

POSITIVE ASPECTS

Teachers involved in Phase I training in the District of Columbia liked the program because it was personalized--each had an opportunity to see what he/she was doing with time in his/her class. Strategies discussed and feedback given during the workshops assisted in making changes for more effective use of time. Several teachers recommended that the course should be offered to all secondary teachers.

PHASE II - DCPS

In order to increase the number of teachers who could be involved in the training, the District of Columbia Public Schools initiated a second cycle of

observer training in which three observers trained during Phase I conducted the sessions under the supervision of a consultant. Consequently, there are three certified observer trainers and an additional twelve observers in the system.

Additional training of teachers will be the responsibility of regions in Phase II. Currently, there are three groups of teachers being trained by regional personnel. This training is being funded by NDN.

TEACHING PROCESSES RELATED TO STUDENTS' READING GAIN*

POSITIVELY RELATED:

- DISCUSSING HOMEWORK OR THE READING CONTENT
- INSTRUCTING NEW WORK
- DRILL AND PRACTICE
- STUDENTS READ ALOUD
- FOCUSING INSTRUCTION ON SMALL GROUP OR TOTAL GROUP
- PRAISE AND SUPPORT
- POSITIVE CORRECTIVE FEEDBACK (REPHRASE QUESTION OR PROBE)
- SHORT QUIZZES

NEGATIVELY RELATED:

- TEACHERS DOING ORGANIZATION OR MANAGEMENT TASKS
- TOO MUCH WRITTEN ASSIGNMENT TIME
- TOO MUCH SILENT READING
- TOO MUCH WORKING WITH ONE STUDENT AT A TIME
- OFFERING STUDENT MANY CHOICES
- SOCIAL INTERACTIONS
- MISBEHAVIOR OR NEGATIVE INTERACTIONS
- OUTSIDE INTRUSIONS (LOUDSPEAKERS, ETC.)

CHART 1

*From Effective Use of Time Program, Stallings, Jane

PGM-PROFILL BASIC SKILLS TEACHER PROFILE PAGE 7

TEACHER NAME:
TEACHER NUMBER:

	VARIABLES	LESS 21111111111000000000C0000000001111111112 09876543210987654321012345678901234567890 GREATER	CRITERION	YOUR CLASS
001	ALL ACADEMIC STATEMENTS	. X	75.00	87.00
002	ALL TESTING	X .	5.00	.00
003	ALL ORGANIZING OR MANAGING STATEMENTS	X .	15.00	10.40
004	ALL BEHAVIOR STATEMENTS	X.	3.00	1.90
005	ALL SOCIAL STATEMENTS	X .	2.00	.20
006	OPEN	X	.00	.00
007	TEACHER INSTRUCTS/EXPLAINS	. X	12.00	18.70
008	TEACHER ASKS DIRECT QUESTIONS OR COMMANDS	. X	10.00	17.10
009	TEACHER ASKS CLARIFYING QUESTIONS	X .	3.00	.70
010	ALL OPEN ENDED QUESTIONS	X .	3.00	.10
011	STUDENT ASKS ACADEMIC QUESTIONS	X	2.00	1.70
012	TEACHER CALLS UPON NEW STUDENTS (ACADEMIC)	.X	6.00	6.90
013	STUDENTS RESPOND ACADEMICALLY	.X	15.00	16.10
014	STUDENT SHOUT-OUTS	. X	.00	4.20
015	STUDENT DOESN'T KNOW ANSWER	X	1.00	1.50
016	STUDENT REFUSES TO ANSWER	X	.00	.00
017	ALL PRAISE	X .	8.00	4.50
018	TEACHER PRAISES OR SUPPORTS ACADEMIC RESPONSES	X .	6.00	4.50
019	TEACHER CORRECTS	X.	6.00	4.60
020	TEACHER CORRECTS WITH GUIDANCE	X	4.00	4.00
021	TEACHER MONITORING ACADEMIC WORK	X .	20.00	10.30
022	ALL WRITTEN WORK	X .	15.00	12.30
023	STUDENTS READ ALOUD	X .	10.00	.00
024	TEACHER READS ALOUD	X.	1.00	.00
025	TEACHER WORKING ALONE	X.	3.00	2.30
026	INTRUSIONS	.X	.00	.90
027	TEACHER INVOLVED WITH VISITOR	.X	.00	1.20
028	POSITIVE INTERACTIONS	X .	4.00	.00
029	NEGATIVE INTERACTIONS	X	.00	.10
030	TEACHER TOUCHING	X .	5.00	.00
031	TEACHER MOVEMENT	X .	10.00	.00

TOTAL NUMBER OF INTERACTIONS FOR TEACHER 821

BASIC SKILLS TEACHER PROFILE DATE TIME 20:05

SNAPSHOT

SUMMARY REPORT 4
ADULT INVOLVEMENT IN TASKS

TEACHER NAME :
TEACHER NUMBER :

	LESS 21111111111100000000000000000011111111112 09876543210987654321012345678901234567890 GREATER	CRITERION	YOUR CLASS
TEACHER INVOLVEMENT WITH			
READING SILENTLY	. X	.00	6.60
READING ALOUD	. X	6.00	40.00
MAKING ASSIGNMENTS	. X	10.00	13.30
INSTRUCTION/EXPLANATION	X .	25.00	.00
DISCUSSION/REVIEW ASSIGNMENTS	. X	10.00	13.30
PRACTICE DRILL	X .	4.00	.00
WRITTEN ASSIGNMENTS	X .	20.00	20.00
TAKING TEST/QUIZ	X .	5.00	.00
NON-MATH/READING INSTRUCTION	X	.00	.00
SOCIAL INTERACTION	X	.00	.00
STUDENT UNINVOLVED	X	.00	.00
BEING DISCIPLINED	X	.00	.00
CLASSROOM MANAGEMENT	.X	5.00	6.60
AIDE INVOLVEMENT WITH			
READING SILENTLY	X	.00	.00
READING ALOUD	. X	.00	6.60
MAKING ASSIGNMENTS	X	.00	.00
INSTRUCTION/EXPLANATION	X	.00	.00
DISCUSSION/REVIEW ASSIGNMENTS	. X	.00	6.60
PRACTICE DRILL	X	.00	.00
WRITTEN ASSIGNMENTS	. X	.00	6.60
TAKING TEST/QUIZ	X	.00	.00
NON-MATH/READING INSTRUCTION	X	.00	.00
SOCIAL INTERACTION	X	.00	.00
STUDENT UNINVOLVED	X	.00	.00
BEING DISCIPLINED	X	.00	.00
CLASSROOM MANAGEMENT	X	.00	.00
OTHER ADULT INVOLVEMENT WITH			
READING SILENTLY	X	.00	.00
READING ALOUD	X	.00	.00
MAKING ASSIGNMENTS	X	.00	.00
INSTRUCTION/EXPLANATION	X	.00	.00
DISCUSSION/REVIEW ASSIGNMENTS	. X	.00	6.60
PRACTICE DRILL	X	.00	.00
WRITTEN ASSIGNMENTS	X	.00	.00
TAKING TEST/QUIZ	X	.00	.00
NON-MATH/READING INSTRUCTION	X	.00	.00
SOCIAL INTERACTION	X	.00	.00
STUDENT UNINVOLVED	X	.00	.00

BASIC SKILLS TEACHER PROFILE DATE TIME 20:05

SNAPSHOT

SUMMARY REPORT 1
STUDENT INVOLVEMENT IN TASKS

TEACHER NAME :
TEACHER NUMBER :

	LESS 2111111111100000000000000000011111111112 0987654321098765432101234567890123456789 0	CRITERION	YOUR CLASS
READING SILENTLY	X .	15.00	2.60
READING ALOUD	X .	6.00	.00
MAKING ASSIGNMENTS	X .	10.00	.00
INSTRUCTION/EXPLANATION	. X	25.00	80.40
DISCUSSION/REVIEW ASSIGNMENTS	X .	10.00	.00
PRACTICE DRILL	X .	4.00	.00
WRITTEN ASSIGNMENTS	X .	20.00	1.30
TAKING TEST/QUIZ	X .	5.00	.00
NON-MATH/READING INSTRUCTION	X	.00	.00
SOCIAL INTERACTION	X	.00	1.30
STUDENT UNINVOLVED	X	.00	.00
BEING DISCIPLINED	X	.00	.00
CLASSROOM MANAGEMENT	X	5.00	14.30

PRE/POST TRAINING PROFILE ANALYSIS

BASIC SKILLS TEACHER PROFILE

Variables	Criterion %	Pre-Training Observation Results	Post-Training Observation Results	Changes
All Academic Statements	75.00	61.40	66.40	
All Testing	5.00	.00	.00	
All Organizing or Managing Statements	15.00	24.70	28.90	
All Behavior Statements	3.00	6.60	4.60	
All Social Statements	2.00	1.50	.00	
Teacher Instructs/Explains	12.00	10.00	.10	
Teacher Asks Direct Questions or Commands	10.00	13.00	5.80	
Teacher Asks Clarifying Questions	3.00	.10	.10	
All Open Ended Questions	3.00	.00	.00	
Student Asks Academic Questions	2.00	.70	.50	
Teacher Calls Upon New Students (Academic)	6.00	8.10	5.30	
Students Respond Academically	15.00	11.70	8.80	
Student Shout-Outs	.00	1.50	.30	
Student Doesn't Know Answer	1.00	1.90	.50	
Student Refuses to Answer	.00	.30	.00	
All Praise	8.00	.70	3.40	
Teacher Praises/Supports Academic Responses	6.00	.50	3.40	
Teacher Corrects	6.00	2.70	6.00	
Teacher Corrects with Guidance	4.00	2.60	.10	
Teacher Monitoring Academic Work	20.00	6.60	14.20	
All Written Work	15.00	3.70	11.40	
Students Read Aloud	10.00	.10	22.20	
Teacher Reads Aloud	1.00	.00	.10	
Teacher Working Alone	3.00	2.20	10.50	
Intrusions	.00	10.40	4.80	
Teacher Involved with Visitor	.00	3.70	2.00	
Positive Interactions	4.00	.00	.00	
Negative Interactions	.00	1.50	.00	
Teacher Touching	.00	.30	.00	
Teacher Movement	10.00	.00	.00	

SNAPSHOT
SUMMARY REPORT 1
STUDENT INVOLVEMENT IN TASKS

	Criterion	Pre-Training Results	Post-Training Results	Changes
Reading Silently	15.00	.00	.00	
Reading Aloud	6.00	10.50	32.20	
Making Assignments	10.00	.00	10.20	
Instruction/Explanation	25.00	3.40	10.20	
Discussion/Review Assignments	10.00	10.10	.00	
Practice Drill	4.00	.00	.00	
Written Assignments	10.00	21.50	8.50	
Taking Test/Quiz	5.00	.00	10.20	
Non-Math/Reading Instruction	.00	.00	.00	
Social Interaction	.00	9.30	5.60	
Student Uninvolved	.00	27.10	3.50	
Being Disciplined	.00	.00	.00	
Classroom Management	5.00	12.10	17.90	

APPENDIX C

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DOES TIME-ON-TASK WORK FOR TEACHER TRAINING TOO?

Sandra Lee Anderson
District of Columbia Public Schools
and
Virginia Polytechnic Institute and State University

Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada, April 1983

ACKNOWLEDGEMENTS

District of Columbia Public Schools

Program Development
J. Weldon Greene
Roger J. Fish

Adult Education and Staff Development
Margaret Labat
Delores Burnett

District Facilitator Project
Susan Williams

Observers:

Trainer Citation of Observation Variables
Mary M. Bender
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Flanders Interaction Analysis
Leslie J. Benton
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Content Analysis
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Carolyn A. Thieme-Busch
Ellen M. Tomchin
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Inspiration and Guidance:

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OVERVIEW

During the fall and winter of 1981-82, twenty-nine junior high teachers in the District of Columbia Public Schools were trained in a program called Academic Learning Time which taught methods for improving student achievement with a focus on the effective use of time in the classroom. The program was based on training designed by Dr. Jane Stallings, entitled, The Process of Teaching Basic Reading Skills in Secondary Schools.

The involved teachers represented various content areas: nine in mathematics, seven in science, six in English, three in history, two in reading, one in industrial arts, and one in French, but the emphasis was on reading skills in those areas. The teachers were personally asked if they would like to participate in training by their principal or regional supervisor. In general, they were selected because of their leadership potential among their peers. Eight teachers were selected from each of the four regions of the school system, and at least two teachers came from any one school. Teachers were given two in-service credits for the training, which took place after school for 2½ hours one day a week for five weeks; they were given no other compensation.

The topics of the five workshops were:

I. Overview of the Research on Teacher Effectiveness

II. Strategies for Teaching Reading

III. Classroom Management

IV. Behavior Management

V. Feedback and Direct Instruction.

The training is designed for one trainer to work with a small group: six to eight teachers. The teachers learn the content of training during

a session, attempt to apply the techniques in their classes during the week, then return to the workshop and freely exchange their experiences. Thus the emphasis is both on (1) content and (2) sharing of experiences.

The training model used in the District of Columbia not only trained the teachers but also trained four supervisors, one from each region, to be trainers. This was accomplished by having a consultant/teacher trainer, who is associated with the Stallings' Teaching and Learning Institute, train a group of teachers on Monday afternoons while the four apprentice trainers observed. The next morning the consultant met with the trainers in effect to train them. That afternoon, Tuesday, each trainer met with the teachers from her region and trained them under the supervision of the consultant.

The training groups were intended to be equal size; however, because of scheduling difficulties, eleven teachers were allowed in the consultant's group, reported in this paper as group 5. The size of the other trainers' groups were: three in group 1, six in group 2, four in group 3, and five in group 4.

Before and after the training each teacher was observed with one class for three different sessions by observers using the Stallings' SRI Secondary Observation Instrument. This observation provides detailed information on teacher interactions every five seconds in the classroom. The information is reported in terms of frequency of occurrence for nineteen variables on the Five Minute Interaction (FMI) report, and in the percentages of time spent on different interactions on the Snapshot report. These pre and post data on the teacher behavior in their classrooms provide the dependent variable for this study. The degree to which teachers alter their teaching from the pre training observation to the post training observation is the measure used to assess the impact of the five different treatments, or training experiences that they receive in their different groups.

Rather than have an observer sit in on each of twenty-five workshops (five workshops over five weeks), it was decided to tape record each session and to use that as the basis for the teacher training observations. A precedent has been established for using transcripts to assess behaviors in work such as that by Smith, Wright, and Flanders (Medley and Mitzel), and a tape recorder is a relatively unobtrusive participant.

None of the established methods for observing teacher behavior was entirely satisfactory, taken by itself. Each provided a different perspective of what was happening in the training. If the theory underlying the method did not measure the aspects of training that in fact were causing the changes in the teachers' behaviors, then the study would reinforce the opinion of just one of the "blind men studying the elephant." It was determined that an eclectic approach for observation would be used with different observation methods. This approach would provide a more complete picture by measuring what actually occurred in different complementary ways. Each method could also serve to validate or refute findings of another method. If similar results came from two different methods, then one could be fairly confident of the findings. Additionally, using different observation methods would provide an indication of which method was most predictive of the changes in teacher behavior.

Four methods of observation were selected: (1) Trainer Citation of Observation Variables, (2) Flanders' Interaction Analysis, (3) B. O. Smith's Analysis of the Logic of Teaching, and (4) Content Analysis.

It would seem that the measure which theoretically would most accurately predict teacher change on any of the thirty-one classroom observation variables would be the amount of emphasis that the trainer put on each of the variables, measured by counting the trainer references to each one. This trainer behavior could be interpreted as "teaching to the test." There is, of course, nothing

wrong with this, especially if it serves to sensitize teachers to which classroom variables have the greatest impact on achievement. The measure of trainer citations should also reflect the trainer's conscious or subconscious concern or sense of importance of that variable. Whether or not this concern transfers to the teachers' behavior is directly measurable.

Flanders in his studies stressed the importance of teacher-student interactions, and this is also stressed in the Stallings training. By measuring the training using Flanders' method, it can be seen whether teachers who are trained with more interactive methods begin to teach their students with more interactive methods.

B. O. Smith in his study of the logic of teaching was seeking to discover if the type of teacher discourse had an effect on students. In transfering his model to teacher training, it can be seen whether teachers learn and translate to behavior better when questions are directed to them of an evaluative nature, rather than a defining or describing nature, for example. The B. O. Smith analysis may give the best insight into what expectations the trainer has of the teachers within the workshops.

Finally, the content analysis will catalogue what the trainers said to the teachers. Their stress on the various aspects of effective teaching and their adherence to the training program can be used to structure an idealized model for training, much as Dr. Stallings developed an idealized model for teaching.

One interest of this study is to learn whether or not time-on-task is as reasonable an approach to observing teacher training as it is in the classroom. A simple time-on-task observation of the tapes indicates that the trainer and teachers are rarely off-task; of course, it isn't possible to see who might be daydreaming. And total tape time of the workshops isn't a valid measure because for one workshop, the tape was inadvertently not turned on for the

second half of the workshop, and in all workshops the tape recorder was turned off occasionally for reasons of confidentiality, coffee breaks, etc. The verbal behavior of the trainer and teachers can be measured, however, with attention paid to the content of training, to the use of time, and to effective training practices.

CHANGE IN TEACHER CLASSROOM BEHAVIOR

The first step in the analysis was to examine the results of the pre and post training observation scores, shown on table 1. These scores are based upon the frequency of occurrence of each variable during a forty-five minute class period. The first variable, All Academic Statements, is a sum of the next ten variables, excepting Teacher Corrects and Guides.[1] The criterion for the frequency of occurrence is an idealized situation which realistically expects some negative activities, such as behavior statements, to happen in a classroom.

The frequencies reported for the D. C. teachers were adjusted to more closely reflect the total frequency for the criterion (188). This was important for comparison reasons. Just as important, however, it was necessary to balance the totals of the pre and post observations which, prior to adjustment, were 282 for the pre observation, and 194 for the post observation.

The large total in the pre observation seems to indicate a flurry of activity. It may be that the teachers, as yet unfamiliar with the program, were quite anxious and did all things at once during the initial observations. Another possibility for the difference in the pre and post frequencies is that for the pre observations, the observers were newly trained, and also working under a tight schedule for completing the required number of observations. This was not the case, four months later, when the post observations were conducted. One effect of the high pre observation scores was to give the trainers and teachers an inflated view of how they were doing without any training.

Note that the observations for each teacher were conducted by a trained observer as well as by their regional supervisor who may have also been their trainer.

[1]. This does not hold true for the pre observation scores with which other difficulties were encountered, as reported on this page.

table 1

FREQUENCY OF OBSERVATION OF CLASSROOM INTERACTION VARIABLES[1]

Observation Variables	Criterion	D. C. Teachers Pre Training	D. C. Teachers Post Training	Difference
All Academic Statements	80.00	55.32	86.66	31.34**
Teacher Instructs/Explains	25.00	20.02	19.08	-.94
Teacher Asks Direct Questions	8.00	21.35	15.45	-5.91**
Teacher Asks Clarifying Questions	3.00	.78	.72	-.06
Teacher Calls Upon Different Students	6.00	8.71	8.58	-.13
Students Respond	8.00	27.64	18.80	-8.84**
Teacher Praises or Supports	4.00	9.19	8.38	-.81
Teacher Corrects	4.00	3.25	3.59	.34
Teacher Corrects and Guides	2.00	9.25	2.57	-6.68**
Students Read Aloud	12.00	0.98	4.05	3.07*
Teacher Reads Aloud	10.00	.01	.44	.43*
All Organizing or Managing Statements	12.00	11.05	8.10	-2.95**
Teacher Working Alone	5.00	9.87	1.00	-8.87**
Teacher Monitoring Written Work	5.00	7.15	5.25	-1.90
All Behavior Statements	3.00	1.76	1.79	.02
All Social Statements	2.00	.11	.10	-.01
Intrusion	.00	.98	1.16	.17
Positive Interactions	2.00	.53	2.28	1.74**
Negative Interactions	.00	.11	.01	-.10
Total:	188.00	186.99	188.46	

**α = .01
*α = .05

1. The number of interaction variables have been adjusted proportionally to approximate the total number of variables in the criterion (188).

A second format which was part of the classroom observations was the SRI Classroom Snapshot in which the observer scans the room noting what all persons are doing at one point in time. The variables for the snapshot are reported as percentage of occurrence, see table 2.

It can be noted on both tables that the teachers did change their behaviors between the pre and post observations. On some of the variables the teachers increased the frequency (shown as a positive difference) and on others, they decreased the frequency (a negative difference). This could be expected since there is only a set amount of time during a class period, and to increase one variable could diminish another. The question to be examined is whether the change was in the direction taught to them during the training.

What the teachers were instructed to do came from three sources. (See table 3.) It was explained to them which variables were positively and which negatively correlated with achievement. Additionally, based on the pre observation profile, each teacher was told to (1) increase, (2) continue at the current level, or (3) decrease the number of interactions he or she had on each variable. The teachers had the given criterion for each variable and were told to approach it in their teaching. The picture became slightly more confusing for any teachers who had academically high classes, because they needed to follow other recommendations, such as not reducing Silent Reading. To synthesize the various sources of recommendations, teachers were told to personally try to attain a balance that is correct for themselves in that class in applying the research findings.

A simple count of the direction of the teacher change shows that for the correlation to achievement, teachers increased or decreased interactions in the recommended direction on ten of the thirteen variables. For the

table 2

PERCENTAGES OF OBSERVED TIME ON SNAPSHOT VARIABLES

Observation Variables	Criterion	D. C. Teachers Pre Training	D. C. Teachers Post Training	Difference
Reading Silently	15.00	1.28	1.06	-.22
Reading Aloud	6.00	1.92	5.29	3.37*
Making Assignments	10.00	5.65	6.40	.74
Instruction/Explanation	25.00	26.03	35.19	9.16*
Discussion/Review Assignments	10.00	15.30	17.20	1.90
Practice Drill	4.00	3.40	2.98	-.42
Written Assignments	20.00	19.96	15.92	-4.04
Taking Test/Quiz	5.00	3.34	4.09	.74
Social Interaction	.00	6.18	2.22	-3.96**
Student Uninvolved	.00	7.20	2.53	-4.66*
Being Disciplined	.00	.31	.09	-.22
Classroom Management	5.00	7.50	4.32	-3.18

**α = .01
*α = .05

table 3

INSTRUCTION AND TEACHER BEHAVIOR TO INCREASE OR DECREASE VARIABLES

Observation Variable Five Minute Interactions	Correlation to Achievement (+ positive - negative)	Instructions to Teachers (number) more	current is o.k.	less	To Approach Criterion (+ more - less)	Direction Teacher Change (significant) (+ more, - less)
All Academic Statements	+	9	20	0	+	+ **
Teacher Asks Direct Questions	+	0	29	0	-	- **
Students Respond	+	2	27	0	-	- **
Teacher Corrects and Guides	+	2	27	0	-	- **
Students Read Aloud	+	29	0	0	+	+ *
Teacher Reads Aloud	+	28	0	0	+	+ *
All Organizing or Managing Statements	-	0	11	16	non sig.	- **
Teacher Working Alone	-	0	6	23	-	- **
Positive Interactions	+	25	4	0	+	+ **
Snapshot						
Reading Aloud	+	18	4	0	+	+ *
Instruction/Explanation	+	11	11	0	non sig.	+ *
Social Interaction	-	0	5	17	-	- **
Student Uninvolved	-	0	3	19	-	- *

**α = .01
*α = .05

instructions to teachers, ten of the thirteen variables agreed and the remaining three were given as currently o.k. The direction of teacher change agreed with all twelve of the changes indicated for approaching the criterion. It would appear that teachers did heed their individual instructions as well as begin to approach the criterion in their interactions.

It isn't likely, however, that the teachers sought to reduce certain positive variables such as, Students Respond, for the purpose of replicating the criterion in their own classes. What is more likely is that those interactions were reduced as teachers put more emphasis on other variables. In no case does the teacher's instructions contradict the correlation to achievement. In several cases, however, the criterion contradicts the other two categories.

For the purposes of this study, the direction of the recommended change will be based upon the correlation (positive or negative) with achievement. The quantity and magnitude of these changes in the given positive or negative direction will be used to compare the five training groups using the different observational techniques.

Table 4 shows the significant changes in the number of teacher interactions by their training groups. All five of the groups made significant overall improvement as shown in the number of academic statements made in class. Additionally, the teachers in Group 1 increased Teacher Praises or Supports, and Positive Interactions. It will be interesting to note from the Flanders analysis if their trainer was also high in praising and supporting them.

The distribution of changes for Group 2 on the FMI variables closely resembles the patterns for Groups 4 and 5. Note additionally, that Group 2 teachers were the only ones to significantly alter the Snapshot variables. This could indicate that for the other training groups, the training was

table 4

CHANGES IN TEACHER BEHAVIOR BY TRAINING GROUP

Observation Variable Five Minute Interactions	Group 1 n = 3	Group 2 n = 6	Group 3 n = 4	Group 4 n = 5	Group 5[1] n = 11	All Groups
All Academic Statements	+ **	+ **	+ **	+ **	+ **	+ **
Teacher Asks Direct Questions		- *[2]	- *[2]	- *[2]	- **[2]	- **[2]
Teacher Calls Upon Different Students				+ **		
Students Respond		- **[2]	- **[2]	- **[2]	- **[2]	- **[2]
Teacher Praises or Supports	+ *					
Teacher Corrects and Guides		- **[2]		- **[2]	- *[2]	- *[2]
Students Read Aloud						+ *
Teacher Reads Aloud						+ *
All Organizing or Managing Statements					- **	- **
Teacher Working Alone		- **		- **	- **	- **
Intrusion		+ *[2]				
Positive Interactions	+ *		- *			
Snapshot						
Reading Aloud						+ *
Making Assignments		- *				
Instruction/Explanation						+ *
Written Assignments		+ *[2]				
Social Interaction		- **				- **
Student Uninvolved		- *				- *

1. Group 5 was trained by the consultant.

2. These changes were not in the direction indicated by the correlation with achievement.

(+ = increase, - = decrease)

**α = .01

*α = .05

a non-adaptational model in that teachers increased or decreased the frequency of certain variables, but did not alter the proportions of time given to different activities. The other groups did make some changes as shown by the significance levels for all groups combined.

The kinds of changes made by Group 2 teachers in the Snapshot variables were to decrease Social Interactions and Students Uninvolved. This may have reflected the increase in Written Assignments, but the students were attending to their writing. Group 2 teachers were also successful in reducing their time spent on Making Assignments.

Group 3, which resembles Group 1 in increasing the Positive Interactions, also significantly reduced the interactions of Teachers Asking Questions and Students Responding, as did Groups 2, 4, and 5. The Flanders and B. O. Smith analyses may shed light on the training experiences of teachers and the question-answer behavior of their trainers.

Group 4, similar to Groups 2 and 5, reduced the Teacher Correcting and Guiding behavior and time spent with Teacher Working Alone. Group 4 teachers were unique in significantly increasing the numbers of different students they called upon. Note that the number of Students Responding declined. This may have been because slower students were now being called upon, and fewer total student answers were possible.

Training for Group 5, conducted by the consultant, operated as a model for the other training groups, which may explain the resemblance of Groups 2 and 4. The consultant, in addition to establishing the model for change, was successful in having teachers reduce their Organizing and Managing Statements.

From the profiles of significant change by group, it is not possible to assert that any one training experience was without question better than another. For this study it would be useful to be able to rank the training groups in order to compare them to the ranks derived from the observational

methods. For that purpose, tables 5, 6 and 7 were developed. Table 5 gives the pre and post observation means on each variable for each group. Table 6 shows the results of analysis of covariance and provides an adjusted post observation mean. The amount of change in the teachers' classroom behaviors on each variable from the pre observation mean to the adjusted post observation mean is divided by the pre observation mean to give a measure of magnitude or percentage of change teachers made in their classrooms. When a correction is made to ensure that teacher changes are in the recommended directions (increase variables positively correlated with achievement, and decrease variables negatively correlated with achievement) as done in table 7, then rankings by group do emerge.

For the FMI variables, given as frequencies, Group 5 had the greatest magnitude of change and was ranked first, Group 3 ranked second, Groups 1 and 2 were very close and ranked third and fourth respectively, and Group 4 ranked fifth. The rankings turned on the variables, Teacher Reads Aloud (TRA) and Positive Interactions (PI). For PI, the changes in Groups 1 and 3 were so great (see table 5) that Group 3 was catapulted to the second rank, and Group 2 was greatly augmented despite the fact that Group 2 had actually declined a small amount (.21 to .18). The problem was caused by using an analysis of covariance with groups of unequal size and widely different pretest to post-test scores.

The results of the analysis of the Snapshot variables, given as percentages, gives Group 2 the first ranking, followed by Groups 5, 3, and 1 respectively. The fifth ranking of Group 4 remains the same as the FMI ranking. These rankings turn on the variable, Reading Aloud (RA), which places Group 2 in the first rank.

Because of the problem with the widely divergent magnitudes of change caused by the analysis of covariance, the percentages are converted to ranks

table 5

PRE AND POST OBSERVATION SCORES BY GROUP*

Variables with Acronym	Pre Observation Mean					Post Observation Mean				
frequencies	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5
All Academic Statements-AAS	59.23	55.56	56.28	56.91	53.05	92.81	85.02	79.31	87.02	88.38
Teacher Instructs/Explains-TIE	24.19	11.92	17.73	27.27	20.83	23.23	9.58	17.90	20.63	22.86
Teacher Asks Direct Questions-TADQ	27.54	22.80	27.30	16.88	18.75	18.13	19.31	19.62	12.66	14.54
Teacher Asks Clarifying Questions-TACQ	1.22	0.82	0.00	1.09	0.78	1.97	0.60	0.68	0.48	0.58
T. Calls Upon Different Students-TCUDS	12.30	13.74	6.14	7.24	6.58	9.61	11.08	6.82	8.98	7.39
Students Respond-SR	33.80	31.28	29.93	21.85	25.79	24.48	23.18	14.47	15.79	17.80
Teacher Praises or Supports-TPOS	6.81	11.34	9.10	10.37	8.16	11.32	9.79	6.63	7.70	7.75
Teacher Corrects-TC	2.11	5.24	3.85	2.92	2.41	3.26	5.39	1.98	2.21	3.91
Teacher Corrects and Guides-TCAG	5.57	13.57	10.60	9.83	7.15	3.06	3.06	1.50	1.66	2.96
Students Read Aloud-SRA	0.24	2.02	1.75	0.00	0.77	0.13	4.08	4.14	9.43	2.63
Teacher Reads Aloud-TRA	0.00	0.04	0.00	0.00	0.01	0.00	0.84	0.07	1.06	0.18
All Organizing/Managing Statements-AOOMS	-7.99	-11.42	-9.05	-9.67	-13.03	-3.13	-9.89	-12.94	-7.24	-7.12
Teacher Working Alone-TWA	-7.75	-8.32	-6.34	-6.22	-14.24	0.00	-0.31	-1.69	-0.62	-1.57
Teacher Monitoring Written Work-TMWW	-7.19	-6.51	-7.76	-2.96	-9.17	-2.19	-3.48	-9.75	-3.64	-6.15
All Behavior Statements-ABS	-1.02	-2.30	-2.50	-1.15	-1.68	-0.39	-1.97	-4.31	-2.25	-0.94
All Social Statements-ASS	-0.09	-0.12	0.00	-0.05	-0.18	-0.16	-0.10	0.00	-0.10	-0.12
Intrusion-I	-1.49	-0.80	-0.45	-1.61	-0.86	-0.35	-1.50	-0.48	-2.25	-0.95
Positive Interactions-PI	1.29	0.21	0.17	0.59	0.62	8.26	0.18	1.60	1.47	2.40
Negative Interactions-NI	-0.07	-0.09	-0.52	0.00	-0.04	0.00	-0.03	0.00	0.00	0.00
percentages										
Reading Silently-RS	-1.77	-0.65	-4.15	0.00	-1.04	0.00	-0.37	0.00	-5.42	-0.14
Reading Aloud-RA	0.23	0.50	5.50	1.24	2.16	4.87	5.50	4.78	4.52	5.82
Making Assignments-MA	-7.87	-5.53	-5.63	0.00	-7.69	-6.33	-1.17	-13.53	-4.84	-7.38
Instruction/Explanation-I/E	33.93	19.92	17.65	30.40	28.27	44.23	33.93	33.38	35.46	33.94
Discussion/Review Assignments-DRA	12.57	10.50	25.25	26.96	19.75	12.97	12.83	27.25	19.12	16.22
Practice Drill-PD	13.63	0.37	1.75	0.00	4.41	8.80	0.05	0.00	1.48	4.75
Written Assignments-WA	-11.93	-12.75	-14.98	-25.94	-25.18	-9.80	-22.12	-15.85	-11.94	-16.04
Taking Test/Quiz-TTQ	3.20	3.93	6.85	0.00	3.30	4.10	5.12	0.00	1.56	6.15
Social Interaction-SI	-2.67	-10.20	-8.88	-4.54	-4.71	0.00	-1.88	-3.63	-2.02	-2.58
Student Uninvolved-SU	-3.10	-22.23	-4.75	-1.56	-3.56	-0.13	-3.95	-1.35	-4.20	-2.09
Being Disciplined-BD	0.00	-0.67	-0.78	0.00	-0.18	0.00	0.00	0.00	-0.10	-0.19
Classroom Management-CM	-2.07	-10.55	-1.78	-8.10	-9.14	-4.40	-7.62	0.00	-5.86	-3.37

*Variables which were to be decreased were entered as negative numbers. If the teachers responded appropriately then there would be fewer interactions and the post observation would be the higher number for negative variables.

table 6

ADJUSTED POST OBSERVATION SCORE AND MAGNITUDE OF CHANGE BY GROUP

Variables by Acronym frequencies	Covariant Effect (d.f.=1,23)	Main Effect (d.f.=4,23)	Adjusted Post Observation Mean (covaried) Grp 1	Grp 2	Grp 3	Grp 4	Grp 5	Percentage of Change $\left(\frac{\text{adj.-pre}}{\text{pre}}\right)$ Grp 1	Grp 2	Grp 3	Grp 4	Grp 5	Correlation with Ach. +pos. -neg.
AAS	4.177	4.221	91.48	84.94	78.99	86.48	89.15	54.4%	52.9%	40.4%	52.0%	68.0%	+
TIE	4.702	1.471	22.44	11.10	18.33	19.27	22.70	-7.2	-6.9	3.4	-29.3	9.0	+
TAIQ	12.325	3.044	15.63	18.72	11.22	14.47	15.60	-43.2	-17.9	-58.9	-14.3	-16.8	+
TACQ	5.123	3.181	1.86	0.58	0.86	0.40	0.58	52.5	-29.3	0.0	-63.3	-25.6	+
TCUDS	8.497	0.739	8.97	10.17	7.29	9.24	7.77	-27.1	-26.0	18.7	27.6	18.1	+
SR	14.384	3.367	22.60	22.06	13.77	17.57	18.38	-33.1	-29.5	-54.0	-19.6	-28.6	+
TPOS	5.227	1.990	12.00	9.18	6.65	7.37	8.05	76.2	-19.0	-26.9	-28.9	-1.3	+
TC	3.083	2.133	3.56	4.86	1.83	2.30	4.13	68.7	-7.3	-52.5	-21.2	71.4	+
TCAG	0.377	0.837	2.93	3.23	1.55	1.69	2.89	-47.4	-76.2	-85.4	-82.8	-59.6	+
SRA	0.051	1.695	0.43	3.65	3.82	9.83	2.71	79.2	80.7	118.3	0.0	251.9	+
TRA	4.119	1.252	0.09	0.58	0.17	1.16	0.23	0.0	13.5	0.0	0.0	2200.0	+
AOOMS	5.139	6.691	-3.88	-9.79	-13.43	-7.58	-6.62	-51.4	-14.3	48.4	-21.6	-49.2	-
TWA	56.610	1.779	-0.48	-0.66	-2.49	-1.45	-0.58	-93.8	-92.1	-60.7	-76.7	-95.9	-
TMWW	6.779	1.333	-2.18	-3.69	-9.55	-5.03	-5.47	-69.7	-43.3	23.1	69.9	-40.3	-
ABS	30.738	1.631	-1.47	-1.19	-3.24	-3.14	-1.06	44.1	-48.3	29.6	173.0	-36.9	-
ASS	0.346	0.944	-0.16	-0.10	0.01	-0.09	-0.13	77.8	-16.7	0.0	80.0	-27.8	-
T	3.940	1.914	-0.13	-1.58	-0.72	-1.96	-1.00	-91.3	97.5	60.0	21.7	16.3	-
PT	66.610	3.671	5.61	1.32	2.90	1.30	2.12	334.9	528.6	1605.9	120.3	241.9	+
NI	0.014	0.910	0.00	-0.04	0.00	0.00	0.00	-1.0	-55.6	-1.0	0.0	-1.0	-
percentages													
RS	0.278	2.001	0.01	-0.38	0.06	-5.44	-0.14	-100.6	-41.5	-101.4	0.0	-86.5	-
RA	0.944	0.066	4.35	5.06	5.89	4.31	5.90	17.9	912.0	7.1	247.6	173.1	+
MA	2.811	2.136	-5.68	-1.21	-13.54	-6.53	-6.78	-27.8	-78.1	140.5	0.0	-11.8	-
I/E	0.494	0.261	43.48	34.52	34.18	35.04	33.72	28.1	73.3	93.7	15.3	19.3	+
DRA	0.322	0.877	12.78	12.51	27.91	19.89	15.84	1.7	19.1	10.5	-26.2	62.5	+
PD	1.130	0.722	9.53	-0.16	-0.11	1.24	4.82	-30.1	-143.2	-106.3	0.0	9.3	+
WA	3.378	1.067	-12.64	-24.67	-17.62	-9.83	-14.19	6.0	93.5	17.6	-62.1	-43.6	-
TIQ	0.528	0.542	4.07	5.25	0.76	0.84	6.15	27.2	33.6	-88.9	0.0	86.4	+
SI	8.067	0.686	-1.07	-0.66	-2.81	-2.52	-3.03	-59.9	-93.5	-68.4	-44.5	-35.7	-
SU	4.726	1.067	-1.01	-0.71	-1.87	-5.41	-2.87	-67.4	-95.8	-60.6	246.8	-19.4	-
BD	0.076	0.090	0.01	-0.01	-0.01	-0.09	-0.19	0.0	-98.5	-98.7	0.0	5.6	-
CM	0.019	1.314	-3.79	-7.96	0.64	-5.93	-3.55	83.1	-24.5	-136.0	-26.8	-61.2	-

table 7

MAGNITUDE OF CHANGE IN CORRECT DIRECTION BY GROUP*

Frequency (FMI) Variable	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5
AAS	54.4%	52.9%	40.4%	52.0%	68.0%
TIE	-7.2	-6.9	3.4	-29.3	9.0
TADQ	-43.2	-17.9	-58.9	-14.3	-16.8
TACQ	52.5	-29.3	0.0	-63.3	-25.6
TCUDS	-27.1	-26.0	18.7	27.6	18.1
SR	-33.1	-29.5	-54.0	-19.6	-28.6
TPOS	76.2	-18.0	-26.9	-28.9	-1.3
TC	68.7	-7.3	-52.5	-21.2	71.4
TCAG	-47.4	-76.2	-85.4	-82.8	-59.6
SRA	79.2	80.7	118.3	0.0	251.9
TRA	0.0	13.5	0.0	0.0	2200.0
AOOMS	51.4	14.3	48.4	21.6	49.2
TWA	93.8	92.1	60.7	76.7	95.9
TMWW	69.7	43.3	-23.1	-69.9	40.3
ABS	-44.1	48.3	-29.6	-173.0	36.9
ASS	-77.8	16.7	0.0	-80.0	27.8
I	91.3	-97.5	-60.0	-21.7	-16.3
PI	334.2	528.6	1605.9	120.3	241.9
NI	1.0	55.6	1.0	0.0	1.0
Total	693.2	636.4	1409.6	-305.8	2963.2
Average	36.48	33.49	74.19	-16.09	155.96
(percentage of change) Rank	3	4	2	5	1
(1 = highest)					

Percentage (Snapshot) Variable	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5
RS	100.0%	41.5%	101.4%	0.0%	86.5%
RA	17.9	912.0	7.1	247.6	173.1
MA	27.8	78.1	140.5	0.0	11.8
I/E	28.1	73.3	93.7	15.3	19.3
DRA	1.7	19.1	10.5	-26.2	62.5
PD	-30.1	-143.2	-106.3	0.0	9.3
WA	-6.0	-93.5	-17.6	62.1	43.6
TTQ	27.2	33.6	-88.9	0.0	86.4
SI	59.9	93.5	68.4	44.5	35.7
SU	67.4	96.8	60.6	-246.8	19.4
BD	0.0	98.5	98.7	0.0	-5.6
CM	-83.1	24.5	136.0	26.8	61.2
Total	211.4	1234.2	504.1	123.3	603.2
Average	17.62	102.85	42.01	10.28	50.27
(percentage of change) Rank	4	1	3	5	2
(1 = highest)					
Average of the two ranks:	3.5	2.5	2.5	5.0	1.5

* If the teachers increased or decreased as directed by the correlation with achievement (table 6), it is listed as a positive change (+). If the teachers increased or decreased opposite the direction recommended by the correlation with achivement, it is listed as a negative change.

as shown in table 8. From this a stabilized picture emerges, and the average of the FMI and Snapshot ranks confirms the average of the two ranks given in table 7. For this study, then, the average rank from table 8 will be the ranking of reference.

For future studies, two avenues for ranking training groups based on outcome variables such as these might be recommended: One is to increase the alpha level to $\alpha = .10$. This would be sensitive to more of the smaller changes made by teachers. The other is to use a criterion referenced measure of change which would not be influenced by different group sizes, starting points or opportunities to change. If the study has variables more equivalent in variance and groups of more equal size, an analysis as done here should be satisfactory.

table 8

RANKING OF THE MAGNITUDE OF CHANGE BY GROUP

Frequency (FMI)

Variable	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5
AAS	2	3	5	4	1
TIE	4	3	2	5	1
TAIQ	4	3	5	1	2
TACQ	1	4	2	5	3
TCUDS	5	4	2	1	3
SR	4	3	5	1	2
TPOS	1	3	4	5	2
TC	2	3	5	4	1
TCAG	1	3	5	4	2
SRA	4	3	2	5	1
TRA	4	2	4	4	1
AOOMS	1	4	5	3	2
TWA	2	3	5	4	1
TMWW	1	2	4	5	3
ABS	4	1	3	5	2
ASS	4	2	3	5	1
I	1	5	4	3	2
PI	3	2	1	5	4
NI	3	1	3	5	3
Total:	51	54	69	74	37
Average Rank:	2	3	4	5	1

Percentage (Snapshot)

Variable	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5
RS	2	4	1	5	3
RA	4	1	5	2	3
MA	3	2	1	5	4
I/E	3	2	1	5	4
DRA	4	2	3	5	1
PD	3	5	4	2	1
WA	3	5	4	1	2
TTQ	3	2	5	4	1
SI	3	1	2	4	5
SU	2	1	3	5	4
BD	3.5	2	1	3.5	5
CM	5	4	1	3	2
Total:	38.5	31	31	44.5	35
Average Rank:	4	1.5	1.5	5	3

Average of the two ranks:*

	3.00	2.25	2.75	5.00	2.00

*1 = highest, 5 = lowest.

TRAINER CITATION OF OBSERVATION VARIABLES

It is reasonable to consider that teachers would change their behaviors not necessarily because of the manner in which they were trained nor because of the style of their trainer, but simply because they were told to do so. The more frequently the trainer mentioned or cited a particular variable, the more likely that the teacher would be aware of that interaction at the time of the post observations. This could be because the teacher had been conditioned to think about the variables or because the teacher, by virtue of the number of citations, knew that that variable was important to the trainer and strived to please her. In either case, it could be expected that there would be a high correlation between the number of times a trainer mentioned a specific observation variable, and the magnitude of change in that variable effected by teachers in their classrooms.

For this analysis the two observers tallied each time the trainer made a specific reference to an observation variable, as shown in table 9. The tally was not to be made for general discussion of the variable, only the use of the same words as stated in the variable. There was some latitude in this criterion, allowing, for example, a tally for the variable, Teacher Praises or Supports, when the trainer simply said, "praise." But an example such as, "intercom," was not allowable for a tally under the variable, Intrusion. Obviously, the problem was one of defining legitimate tallies. The key to the decision was whether or not the trainer seemed to be citing a specific behavior which would be measured on the post observation.

The interrater correlation on a one hour observation of the tape was $r = .97$ for 28 of the 29 variables. On that observation, however, one observer failed to tally references to the variable, Intrusion. For all 29 variables, the interrater correlation was $r = .69$. The observer had picked up Intrusion prior to and after the correlated sample. Several different

table 9

TRAINER CITATION OF OBSERVATION VARIABLES

Variables	Acronym	Grp1	Grp2	Grp3	Grp4	Grp5
INSTRUCTION						
1. All Academic Statements	AAS	5	19	4	5	14
2. Teacher Instructs/Explains; Instruction/ Explanation (interactive instruction, direct instruction)	TIE I/E	34	70	22	40	41
3. Teacher Asks Direct Questions	TADQ	8	19	17	7	5
4. Teacher Asks Clarifying Questions	TACQ	7	24	24	6	4
5. Teacher Calls Upon Different Students	TCUDS	3	4	2	2	8
6. Student Responds	SR	8	9	6	6	2
7. Reading Silently	RS	7	16	10	7	9
8. Students Read Aloud (reading aloud)	SRA	30	28	19	24	32
9. Teacher Reads Aloud (reading aloud)	TRA	22	26	13	25	29
10 Reading Aloud (mean of 8 & 9 above)	RA	26	27	15	24	30
10. Making Assignments	MA	9	19	9	9	9
11. Practice Drill	PD	8	12	6	1	12
12. Written Assignments	WA	9	21	14	5	13
13. Test Taking/Quiz	TTQ	9	19	14	15	16
CORRECTIVE FEEDBACK						
14. Teacher Praises or Supports (praise)	TPOS	33	36	28	16	20
15. Teacher Corrects	TC	11	11	10	9	6
16. Teacher Corrects and Guides (probing and guiding)	TCAG	19	19	17	19	6
17. Discussion/Review Assignments	DRA	3	13	6	8	6
CLASSROOM MANAGEMENT						
18. All Organizing or Managing Statements	AOOMS	37	33	20	19	26
19. Teacher Working Alone	TWA	13	8	2	4	5
20. Teacher Monitoring Written Work (monitoring)	TMWW	7	12	5	6	10
21. Intrusion	I	16	12	6	9	4
22. Positive Interactions (interactions)	PI	19	28	9	23	10
23. Negative Interactions	NI	2	11	4	7	2
24. Student Uninvolved	SU	1	5	5	1	0
25. Classroom Management	CM	14	15	16	6	21
BEHAVIOR MANAGEMENT						
26. Behavior Statements	ABS	12	26	13	10	12
27. Social Statements	ASS	4	8	6	5	1
28. Social Interaction (socializing)	SI	7	8	6	8	9
29. Being Disciplined (disciplining)	BD	2	2	4	7	3
Total:		359	534	317	309	335*

*For one half of one workshop for Group 5 the tape recorder was accidentally not recording. The total number of references would more accurately approximate 369.

explanations are plausible, but the point is that the observers should be trained or conditioned not to fail to recognize any observation variable.

Given the high interrater reliability on most of the variables, the results are probably fairly accurate. Other spot checks on the tallies by the researcher indicated accuracy. The two observers each listened to different halves of each trainer's workshops, and these were alternated so the observer tallies are evenly applied to each trainer.

An examination of total number of references to the observation variables by the trainers (see table 10) provides no consistent ranking with the ranking of teachers' change in their classrooms, except for Group 4 which was last in both. Group 2 had the greatest number of trainer citations, and was the only group with significant Snapshot changes (table 4). Note on the last workshop, Group 2 mentioned 19 different variables, more than all the others, and made repeated references, totaling 96 over all the variables. Looking at this table alone, it would appear that the strongest training programs may be those which have an academic approach with an emphasis on the behaviors to be changed. However, a Tukey test from a one-way ANOVA of trainer citation

table 10*

Rank	Group		Workshop I	II	III	IV	V	Total
4	1	No.	23	22	17	21	15	-
		Sum	70	92	71	73	53	359
2	2	No.	26	27	24	10	19	-
		Sum	113	118	172	35	96	534
3	3	No.	24	21	21	15	14	-
		Sum	119	38	71	45	44	317
5	4	No.	26	23	20	14	7	-
		Sum	96	90	42	63	18	309
1	5!	No.	20	26	9(18)	18	11	-
		Sum	88	125	34(68)	57	31	335(369)

*Rank is based upon table 8, the average magnitude of change.
Number is the number of different variables mentioned.
Sum is the total number of citations for all variables.
!Figures for Group 5 are adjusted for the missing tape for half of the third workshop.

combined with magnitude of change by group, showed no significant difference between the training groups.

In looking for a relationship between the ranking of the magnitude of change by group (table 8) and the ranking of the trainer citation (table 9) over each variable, only two variables had duplicate rankings: Teacher Reads Aloud (TRA) and All Behavior Statements (ABS). This question of whether or not the number of times a variable was mentioned in training had an influence on how much the teachers changed that variable is examined by a two-way ANOVA which showed significant main effects between trainer citation and teacher change, (d.f = 1,248; F = 4.467; p. = .036). This significant difference means that the training experience did not translate into classroom behavior. On table 11, which gives the means for the five groups combined, and graph 1, which illustrates the same for trainer citation by teacher change on each variable, no significant correlation is in evidence.

The ANOVA test found that there was a significant interaction between the variables and whether they were from the training or classroom situation, (d.f. = 30,248; F=1.794; p. = .009). This significant interaction, however, is a result of the large increases in some variables and decreases in others.

Other significant main effects were found between the variables, (d.f. = 30,248; F = 1.926; p. = .004). The variables each acted differently as can be seen in table 11. The variables on which teachers reduced their behavior generally fall at the top of the list, and those variables on which the teachers made the largest improvements are shown at the bottom. A Tukey test found that the only variable which operated significantly differently from the others was Positive Interactions (PI) at the bottom of the list. It was significantly different from the top sixteen variables on the list. On the graph those are the variables which form a circle cluster in the bot-

table 11

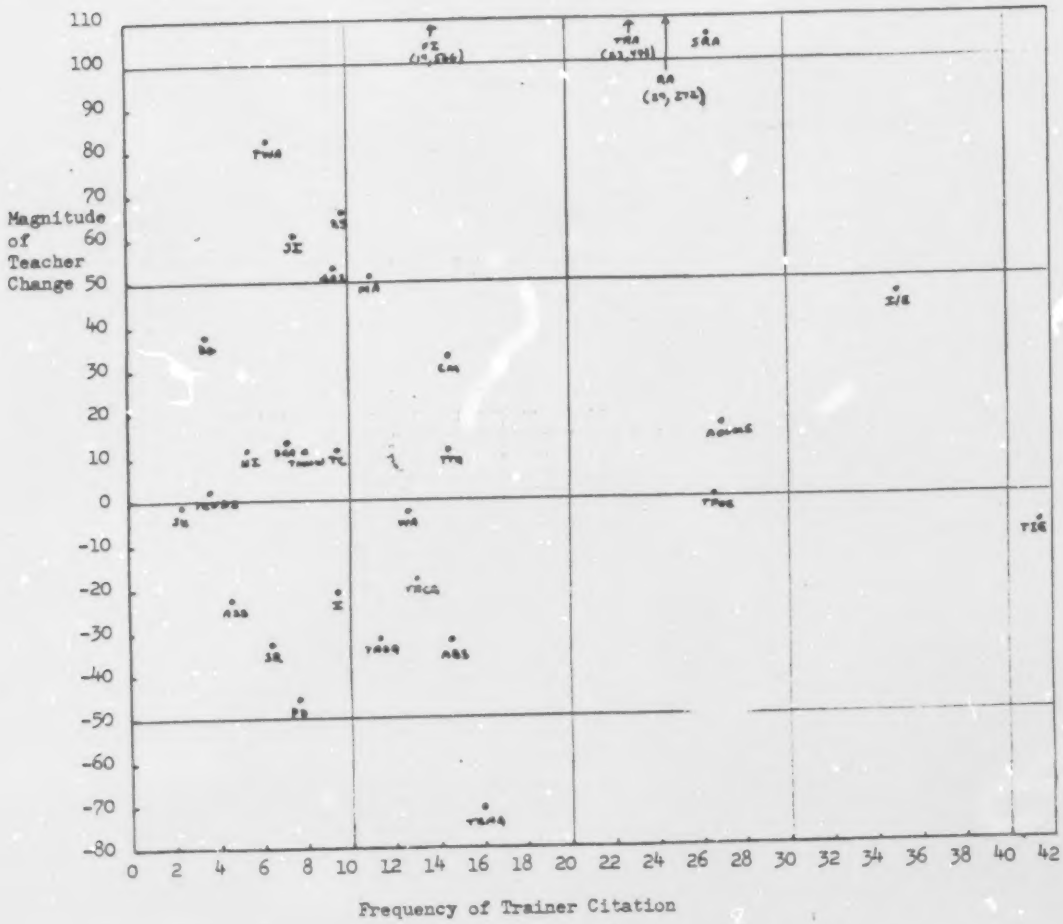
AVERAGE TRAINER CITATION AND TEACHER CHANGE ON EACH VARIABLE

Variables	Average Trainer Citation	Average Teacher Change	Combined Averages
Teacher Corrects and Guides (TCAG)	16.0	-70.28	-27.14
Practice Drill (PD)	7.8	-54.06	-23.13
Teacher Asks Direct Questions (TADQ)	11.2	-30.22	-9.51
All Social Statements (ASS)	4.8	-22.66	-8.93
All Behavior Statements (ABS)	14.6	-32.30	-8.85
Students Respond (SR)	6.2	-32.96	-13.38
Intrusions (I)	9.4	-20.84	-5.72
Teacher Asks Clarifying Questions (TACQ)	13.0	-13.14	-.07
Student Uninvolved (SU)	2.4	-.52	.94
Teacher Calls Upon Different Students (TCUDS)	3.8	2.26	3.03
Written Assignments (WA)	12.4	-2.28	5.06
Negative Interactions (NI)	5.2	11.72	8.46
Teacher Monitors Written Work (TMWW)	8.0	12.06	10.03
Discuss/Review Assignments (DRA)	7.2	13.52	10.36
Teacher Corrects (TC)	9.4	11.82	10.61
Test Taking/Quiz (TTQ)	14.6	11.66	13.13
Teacher Praises or Supports (TPOS)	26.6	.02	13.31
Teacher Instructs/Explains (TIE)	41.4	-6.22	17.60
Being Disciplined (BD)	3.6	38.32	20.96
All Organizing or Managing Statements (AOOMS)	27.0	17.62	22.31
Classroom Management (CM)	14.6	33.08	23.84
Making Assignments (MA)	11.0	51.64	31.32
All Academic Statements (AAS)	9.4	53.54	31.47
Social Interaction (SI)	7.5	60.40	34.00
Reading Silently (RS)	9.8	66.00	37.90
Instruction/Explanation (I/E)	41.4	45.94	43.67
Teacher Working Alone (TWA)	6.4	83.80	45.12
Student Reads Aloud (SRA)	26.6	106.02	66.31
Reading Aloud (RA)	24.4	271.54	147.97
Teacher Reads Aloud (TRA)	23.0	442.70	232.85
Positive Interactions (PI)	17.8	566.32	292.06
		Grand Mean:	33.08
		S.D.:	69.453

tom left-hand portion of the graph. One important indication of table 11 is that the act of teaching is an integrated set of behaviors, and to modify any one member of that set will effect the other members. To increase some variables will decrease others.

graph 1

SCATTERGRAM OF VARIABLES BY TEACHER CHANGE AND TRAINER CITATION



FLANDERS INTERACTION ANALYSIS

The measurement and analysis of teacher-student classroom interactions designed by Flanders has been submitted as a major tool by which teachers can examine and understand their own behaviors, and if desired, modify their behaviors accordingly. The Flanders system provides a measure of such facets as direct vs. indirect instruction, teacher vs. student talk, interaction vs. monologue, and student-initiated discussion vs. student response. In addition, specific teacher behaviors such as praising, questioning, lecturing and reprimanding are measured.

This tool, applied to a situation of a trainer instructing teachers should be most useful for trainers since they are in the profession of knowing how to best instruct others. In this study, the Flanders analysis should help portray what types of trainer-teacher interactions provide the best model for encouraging teacher change. In addition, insights may be gained into the types of changes made by teachers in the different training groups.

The Flanders analysis was conducted by two observers who learned the technique with the help of a programmed instruction book by William J. Kryspin and John F. Feldhusen entitled, Analyzing Verbal Classroom Interactions. After reading the book the observers held two practice sessions of about 2½ hours each, at the end of which their interrater correlation using all ten categories was r = .82.

The design called for each observer to take a 10% sample of the workshop tapes. This consisted of one minute of observation for each ten minutes of training time. The start points for the one minute were determined randomly from the first ten minutes and assigned using the built-in counter in each tape recorder.

The counter is calibrated to the revolutions of one spindle of the tapes. Of course, when the tape is quite thick on that spindle, the revolutions are much slower than when the tape is almost completed. For that reason, the first tape recorder was hand tabulated, noting the counter number at the end of each ten minutes of tape time. The second tape recorder had a different count frequency, and these were matched at the beginning and middle of the tape with the first recorder with several trials and averaged about 3.6 counts to the first recorder's one count. The second observer was instructed to multiply the count of his start points by 3.6. When the observations were completed, it was obvious that the adjustment had not been accurate since the second observer recorded only three observations for every five of the first observer. This resulted in a sample of about 16% of the time.

During the minute's observation the observers recorded one communication or statement every three seconds, making twenty statements per observation minute. Using Flanders' method of analysis (see charts 1-5), each statement is paired with the statement following it. The first statement is recorded by row and the successive statement in the appropriate column of that row. With the sampling the last statement does not have a succeeding statement. On the chart, those are recorded as identical pairs (1-1, 8-8, ...) as that tally was desirable for the most complete row totals. In the analysis of interaction vs. identical pairs, the last statements have been deleted from the totals.

In looking for the relationships mentioned earlier between trainer behavior and teacher classroom behavior on praising and question/answer duads, some interesting findings come from the Flanders analysis. For praising the percentages for each group were: Group 1 - 1%; Group 2 - 3.6%; Group 3 - 0.9%; Group 4 - 1.6% and Group 5 - 0.2%. The outstanding trainer

chart 1

Flanders' Interaction Analysis: Group 1*

Statement		Successive Statement 1	2	3	4	5	6	7	8	9	10	Total
1. Accepts feeling	1	0.2		0.1	0.1				0.1	0.1	0.1	0.7
2. Praises or encourages	2			0.1	0.1	0.2				0.7	0.1	1.1
3. Accepts or uses student ideas	3	0.1		1.0	0.1	0.1				0.3	0.1	1.8
4. Asks questions	4				3.6	0.8	0.1		2.0	0.8	0.7	8.0
5. Explaining or informing	5		0.3		1.4	26.6	0.1		0.1	2.9	0.9	32.5
6. Gives directions	6				0.1	0.1	0.2			0.1		0.5
7. Scolding/reprimanding or defending authority	7											0.0
8. Student talk: expected or predictable response	8	0.2		0.1	0.3	0.3	0.1		2.4	1.5	0.2	5.0
9. Student talk: initiated response	9	0.1	1.1	0.5	1.6	2.4				38.0	0.9	44.7
10. No talk/all talk, transition between students	10			0.1	0.5	1.1			0.6	1.4	2.1	5.7

% Trainer Talk (rows 1-7) 44.5%
% Teacher Talk (rows 8-9) 49.7%
% No Talk/All talk (row 10) 5.7%

% Indirect Training (rows 1-4) 25.9%
% Direct Training (rows 5-7) 74.1%

% Interaction 26.9%
% Identical Pairs 73.1%

*Figures are reported in percentages. n = 1480

chart 2

Flanders' Interaction Analysis: Group 2*

Statement

1. Accepts feeling
2. Praises or encourages
3. Accepts or uses student ideas
4. Asks questions
5. Explaining or informing
6. Gives directions
7. Scolding/reprimanding or defending authority
8. Student talk: expected or predictable response
9. Student talk: initiated response
10. No talk/all talk, transition between students

Successive Statement

	1	2	3	4	5	6	7	8	9	10	Total
1	0.1	0.1	0.1								0.2
2	0.1	0.8	0.1	0.3	0.8	0.1		0.1	1.1	0.3	3.6
3			0.8		0.2				0.1	0.1	1.1
4	0.1			1.0	0.3			1.3	0.2	0.6	3.6
5		0.4	0.1	1.5	46.1	0.6		0.2	2.5	2.6	54.0
6					0.6	0.7			0.1	0.1	1.5
7											0.0
8	0.1	0.3		0.2	0.1	0.1		0.8	1.2	0.1	2.8
9		1.8	0.2	0.4	2.6				18.9	1.3	25.3
10		0.4		0.3	2.2	0.1		0.4	1.5	3.0	8.0

% Trainer Talk (rows 1-7) 64.0%
% Teacher Talk (rows 8-9) 28.0%
% No Talk/All Talk (row 10) 8.0%

% Indirect Training (rows 1-4) 13.3%
% Direct Training (rows 5-7) 86.7%

% Interaction 29.0%
% Identical Pairs 71.0%

*Figures are reported in percentages. n = 1708

chart 3

Flanders' Interaction Analysis: Group 3*

Statement		Successive Statement 1	2	3	4	5	6	7	8	9	10	Total
1. Accepts feeling	1	0.1		0.1	0.1	0.1				0.1		0.4
2. Praises or encourages	2			0.1	0.1					0.4	0.1	0.9
3. Accepts or uses student ideas	3			0.5	0.1					0.1	0.2	0.9
4. Asks questions	4		0.1		2.0	0.6			1.0	0.1	0.4	4.1
5. Explaining or informing	5		0.1		1.0	40.0	0.2		0.1	1.3	1.9	44.6
6. Gives directions	6					0.1	0.5					0.6
7. Scolding/reprimanding or defending authority	7											0.0
8. Student talk: expected or predictable response	8		0.1		0.2	0.2			1.7	0.5	0.3	2.9
9. Student talk: initiated response	9	0.1	0.6	0.3	0.6	1.7	0.1			26.6	2.0	3 .8
10. No talk/all talk, transition between students	10	0.2		0.1	0.3	1.8	0.4		0.4	2.1	8.8	14.0

% Trainer Talk (rows 1-7) 51.3%
% Teacher Talk (rows 8-9) 34.7%
% No Talk/All Talk (row 10) 14.0%

% Indirect Training (rows 1-4) 12.2%
% Direct Training (rows 5-7) 87.8%

% Interaction 20.7%
% Identical Pairs 79.3%

*Figures are reported in percentages. n = 1521

chart 4

Flanders' Interaction Analysis: Group 4*

Statement		Successive Statement 1	2	3	4	5	6	7	8	9	10	Total
1. Accepts feeling	1	0.1		0.1	0.1							0.2
2. Praises or encourages	2		0.5	0.1	0.1	0.5				0.3	0.2	1.6
3. Accepts or uses student ideas	3		0.1	1.1	0.1	0.2				0.2	0.1	1.6
4. Asks questions	4				1.7	0.2			1.6	0.1	1.2	4.8
5. Explaining or informing	5		0.2	0.1	1.3	37.4	0.2		0.2	1.7	2.0	43.0
6. Gives directions	6					0.2	0.2					0.3
7. Scolding/reprimanding or defending authority	7											0.0
8. Student talk: expected or predictable response	8		0.1	0.1	0.1	0.3			2.8	1.2	0.1	4.4
9. Student talk: initiated response	9	0.1	0.9	0.4	0.6	1.5	0.1			32.6	1.2	36.7
10. No talk/all talk, transition between students	10	0.1	0.2		0.5	1.6			0.5	2.0	2.3	7.2

% Trainer Talk (rows 1-7) 51.6%
% Teacher Talk (rows 8-9) 41.2%
% No talk/All Talk (row 10) 7.2%

% Indirect Training (rows 1-4) 16.0%
% Direct Training (rows 5-7) 84.0%

% Interaction 21.7%
% Identical Pairs 78.3%

*Figures are reported in percentages. n = 1236

chart 5

Flanders' Interaction Analysis: Group 5*

Statement		Successive Statement 1	2	3	4	5	6	7	8	9	10	Total
1. Accepts feeling	1					0.1						0.1
2. Praises or encourages	2		0.3			0.1				0.5	0.1	0.9
3. Accepts or uses student ideas	3									0.2		0.2
4. Asks questions	4		0.1		0.9	0.1		0.1	1.6	0.3	0.6	3.6
5. Explaining or informing	5				0.6	22.9	0.1			1.3	1.1	26.0
6. Gives directions	6					0.1	0.4				0.2	0.8
7. Scolding/reprimanding or defending authority	7							0.1	0.1			0.1
8. Student talk: expected or predictable response	8		0.2	0.1	0.3	0.3			2.6	1.0	0.3	4.8
9. Student talk: initiated response	9	0.1	0.6	0.1	1.3	1.1			0.1	44.7	2.7	50.6
10. No talk/all talk, transition between students	10				0.4	1.7			0.3	2.9	7.5	12.9

% Trainer Talk (rows 1-7)	31.7%	% Indirect Training (rows 1-4)	15.2%
% Teacher Talk (rows 8-9)	55.4%	% Direct Training (rows 5-7)	84.8%
% No Talk/All Talk (row 10)	12.9%		
		% Interaction	21.3%
		% Identical Pairs	78.7%

*Figures are reported in percentages. n = 1598

for praising was Group 2, which did not have the first ranking, but did have the significant changes in the classroom Snapshot. Group 1 had been the only group of teachers to significantly increase their praising of students, but this did not translate from their trainer's praising.

For questioning behavior the group percentages were: Group 1 - 8.0%; Group 2 - 3.6%; Group 3 - 4.1%; Group 4 - 4.8% and Group 5 - 3.6%. The interesting point to note here is that Group 1 teachers were the only ones who did not decrease significantly the variables of Teacher Asks Direct Questions and Students Respond. The Group 1 trainer had been the trainer to use the most questions.

The Stallings model for training is designed for small groups where teachers are encouraged to bring their experiences to the group for suggested solutions. This is a situation similar to Flanders' indirect instruction. If the teachers transferred to their classrooms their experiences from training, those groups with a greater proportion of indirect instruction would be expected to have more praising and supporting and positive interactions than the teachers in groups with direct training approaches. An examination of table 12 supports this relationship. The Group 1 trainer had the most indirect approach, and her teachers were the ones who had increased their praising and supporting of students. The link between indirect training and teacher-student positive interactions would also hold for Group 1, but fails for Group 3 which also had positive interactions, but the most direct trainer style.

It could be postulated that trainers who do not dominate the discussions would be most likely to induce their teachers to want to change their classroom interactions. This appears to be supported by the low percentage of trainer talk (31.7%) in Group 5, which had the highest ranking of teacher

table 12

GROUP SUMMARIES OF THE FLANDERS CHARTS

	Group 1	Group 2	Group 3	Group 4	Group 5
% Indirect Training	25.9%*	13.3%	12.2%°	16.0%	15.2%
% Direct Training	74.1	86.7	87.8	84.0	84.8
% Trainer Talk	44.5	64.0*	51.3	51.6	31.7°
% Teacher Talk	49.7	28.0	34.7	41.2	55.4
% No Talk/All Talk	5.7	8.0	14.0	7.2	12.9
% Interaction	26.9	29.0*	20.7°	21.7	21.3
% Identical Pairs	73.1	71.0	79.3	78.3	78.7

*Group with the greatest percentage.
°Group with the least percentage.

change. However, the importance of teacher talk vs. trainer talk is not supported by the remaining groups in which Group 2, ranked second, has the highest proportion of trainer talk, and Group 4, ranked last, falls in the middle of the proportions.

It may be that teachers from training groups with more interaction modified their classroom behaviors to have more teacher questioning and student responding interactions. This would be best represented by Group 1 which did not decrease interactions on these variables. Table 12 indicates, however, that no such relationship can be established.

Group 5, which had the highest ranking is different from the other groups in the Flanders analysis in the categories, Accepts Feelings, and Accepts or Uses Student Ideas, in which Group 5 has the lowest percentage. A possible explanation is that the trainer did not want to accept or reinforce teachers' current behaviors; instead she wanted to encourage them to adopt the behaviors taught by the program.

Group 2, in which the teachers made significant change in the Snapshot variables, presents a model distinguished in three ways: Group 2 had the

greatest amount of trainer talk -- two-thirds of the statements. In addition this group had the greatest number of interactions and praise.

The Flanders analysis appears to be very useful for trainers to examine their own individual styles of training. It is not as strong in establishing that the dimensions that it measures are critical in effecting teacher change. As a measurement tool, it identified an outstanding group on a few items but could not discriminate among the remaining groups.

The adaptation of the classroom observation technique to an observation of taped teacher training was not difficult. There was a feeling of inappropriateness of separating categories 8 and 9 (Predicted Response and Unsolicited Response). In most situations the teachers were asked to give descriptions of their classroom situations which could be in either category.

The other major question of misfit was the emphasis on interaction. The Flanders analysis was designed for the quick—teacher asks question then student responds—exchanges of the classroom. For adults, each speaker, whether trainer or teacher usually talks for a prolonged period. That is why so many of the tallies on the charts fall in cells (5-5) and (9-9). The tallies in the other cells do, however, shed valuable information about the trainer's style and would suggest that this observation system is valuable, but that different expectations and analyses of the data should be made for teachers in training as opposed to students in a classroom.

B. O. SMITH'S ANALYSIS OF THE LOGIC OF TEACHING

In the 1950's B. O. Smith studied classroom discourse by using tape recordings. Transcripts of the tapes formed the basis for identifying episodes or completed verbal transactions between two or more speakers. As Smith describes it, "We can sense a forward surge in the flow of talk, propelled by the familiar rising tones of a question or declaration. A spate of responding talk is thus launched, runs on, then tapers off." (Smith, p. 3.3) Within this description it can be seen that an episode has three parts: an opening phase, a sustaining phase, and a terminating phase. Smith concentrated on the entry statement which initiated the opening phase of an episode. The entry, "always contains a verbal move which evokes at least one, but more often a series of related verbal exchanges. It is always a self-initiating move on the part of the person who makes it and is followed by responding remarks." (Smith, pp. 5.1-5.2)

The entry is usually a question and thus can be analyzed for the type of logic or symbolic operations being required of students, or in this case, of teachers in training. The category of logic of the entry was determined by the type of response it demanded. Smith used an empirical procedure for defining the categories based upon the nature of the entries themselves.

The categories which fit the empirical approach and which were still common in discourse on logic were: Definition, Designation, Classification, Conditional Inference and Substituting. Other categories -- Explanation, Evaluation, and Compare/Contrast -- though not established in studies of logic, demand specific forms of logical thinking. The remaining categories, Describing, Stating and Reporting, were further categories required by the empirical approach of the study in order to classify all entries, as was the category of instructor directions, Directing and Managing Statements.

These categories can provide insights to the type of thought and analyses teachers were being asked to make of their teaching situations. Certain questions or entries require teachers to more deeply examine their teaching behaviors, and thus might be more likely to alter those behaviors.

The procedures used basically followed those recommended by Smith; however, a transcript was not prepared because of time and cost considerations, and because it appeared to be necessary only to write the entry phrases of the trainers. The entry phrases proved to be the major problem in adapting the classroom model to a teacher training situation: In teacher training, many of the episodes were initiated by the teachers, and the trainer would speak only during the terminating phase of the episode. The decision was made to only code the trainer's entry statements. As a result, the teacher-initiated episodes were not used. The major point to be made is that teachers initiated much of their own training, which is not as true of students in a classroom.

Five observers each listened to one workshop of each of the five trainers. The observers wrote down each entry question or statement of the trainers. One rule required that a statement could be counted as an entry only if it asked for and received a response from teachers. After the entries were typed, they were color-coded by workshop and by trainer, and cut out to have only one entry on each slip of paper. The approximately 700 slips, lying in one pile, were alternately divided into two sets. Four observers formed two teams, and each team analyzed all of the entries in one of the sets and placed them in the appropriate category as shown in chart 6.

Using the number of entries by category, except Substituting, and by trainer, ($n = 61$), the correlation between teams was $r = .82$. For Substituting there were no tallies. Even with the high correlation, there was a problem in the Stating category for which one team had assigned 102 entries compared

chart 6

CATEGORIES OF LOGIC

Categories of B. O. Smith*	Working Definitions Used with Categories
I. DEFINING - provide the meaning of a term. Concern is with how words or other symbols refer to objects.	I. deals with definitions.
II. DESCRIBING - tell about something or represent it by words.	II. answers are to be yes or no, or a specific answer, without any explanation.
III. DESIGNATING - identify something by name. Something is described and the name used to refer to it is asked for.	III. given the category, identify the items that fall in that category.
IV. STATING - state something; simply naming or describing is seldom satisfactory.	IV. answers must give an explanation; may answer a "what" question, may begin with yes or no.
V. REPORTING - report on a document, or give a summary or review	V. summarizing
VI. SUBSTITUTING - perform a symbolic operation, usually of a mathematical nature.	VI. mathematical operations
VII. VALUATING - estimate the worth, dependability, desirability of something.	VII. render a judgement or evaluation that is professionally based.
VIII. OPINING - express a belief, usually based on little or no evidence.	VIII. give an opinion; answers questions like "What do you think?" "How do you feel about ...?"
IX. CLASSIFYING - place a given instance into the class (type, sort, group, set, kind) to which it belongs.	IX. classify; given an item, identify the category to which it belongs.
X. COMPARING AND CONTRASTING - compare two things noting their similarities and differences.	X. compare or contrast
XI. CONDITIONAL INFERRING - provide a consequent, given an antecedent or condition in the entry statement.	XI. use inferential thinking; entries contain an antecedent, may use the word, "if."
XII. EXPLAINING - explain a particular event or give an antecedent, when a particular consequent is provided.	XII. responds to a "how" or "why" question; gives an explanation as to why something occurred. More explanatory than STATING.
XIII. DIRECTING AND MANAGING CLASSROOM - trainer statements designed to keep the class activities moving.	XIII. gives instructions of what to do.
	XIV. DEFAULT - legitimate or illegitimate entries which are ambiguous.

*Smith, pp. 5.1 to 5.18

to the other team's 50. Because distinction among levels of trainers' entries was of greater importance and because an effect of rater bias would be lessened, the team with the fewer number assigned to Stating (meaning that finer distinctions were made) reanalyzed the 102 entries. This then created an imbalance in the Describing category which were then also re-analyzed by the one team. After the reanalyses, the two groups were still correlated with r = .81. Major findings of this process were that (1) teams need to know more clearly to what degree their decisions are to be linguistically based, and (2) there is a team/rater with trainer interaction.

As Smith found, the team decisions were often based on linguistic clues; that is, the use of words such as "how" or "why" often provided the first indication of which category was appropriate for an entry. The categories as defined by Smith were supplemented with verbal clues and working definitions by the teams on this research (chart 6).

The most frequent categories of trainer entries were Describing, Stating and Explaining, and this was consistent across groups. (See table 13.) Group 1 strongly distinguished itself from the other groups by the large proportion of opining entries, coupled with the low valuating proportion. This may explain why Group 1 teachers did not lose or decrease their frequencies on any of the observed positive variables: The effect of the trainer's constantly asking the teachers' opinions in fact reinforced their current behaviors. Group 1 had the largest total of entry statements, which is reinforced by the Flanders' total number of questions, (chart 1, row 4).

Group 2 had the fewest total entry statements, indicating that the instructor did not initiate as many episodes or talked more in monologue. Refering to Flanders' finding (chart 2, cell 5-5) indicates that the Group 2 trainer did use a lot of monologue, more than the other trainers. In he Flanders findings, this trainer had the greatest percentage of trainer talk and the greatest number of interactions. This trainer used Smith's

table 13

CATEGORIES OF LOGIC OF TRAINERS' ENTRY STATEMENTS

Categories	Group 1 #	Group 1 %	Group 2 #	Group 2 %	Group 3 #	Group 3 %	Group 4 #	Group 4 %	Group 5 #	Group 5 %	Average %
I. DEFINING	5	2.9%	7	7.0%	6	4.3%	5	4.5%	1	0.6%	3.9%
II. DESCRIBING	37	21.6	44	44.0	40	28.4	32	28.6	53	33.8	31.3
III. DESIGNATING	10	5.8	8	8.0	8	5.7	19	17.0	14	8.9	9.1
IV. STATING	32	18.7	11	11.0	25	17.7	12	10.7	26	16.6	14.9
V. REPORTING	3	1.8	0	0.0	1	0.7	0	0.0	1	0.6	0.6
VI. SUBSTITUTING	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0
VII. VALUATING	5	2.9	4	4.0	8	5.7	9	8.0	9	5.9	5.3
VIII. OPINING	35	20.5	3	3.0	15	10.6	7	6.3	18	11.5	10.4
IX. CLASSIFYING	2	1.2	0	0.0	6	4.3	2	1.8	3	1.9	1.8
X. COMPARE/ CONTRAST	2	1.2	1	1.0	2	1.4	0	0.0	2	1.3	1.0
XI. CONDITIONAL INFERRING	4	2.3	5	5.0	1	0.7	1	0.9	3	1.9	2.2
XII. EXPLAINING	18	10.5	10	10.0	16	11.3	16	14.3	17	10.8	11.4
XIII. DIRECTING AND MANAGING STATEMENTS	18	10.5	7	7.0	13	9.2	9	8.0	10	6.4	8.2
DEFAULT/NOT ASSIGNABLE	(6)		(3)		(6)		(0)		(4)		
Total:	171		100		141		112		157		

Describing category more than the other trainers and used Opining the least. This trainer apparently wanted short answers based on the content being learned, without any loss of time discussing individual opinions.

Group 3 had the largest proportion of classifying entries; although this was still small. In this situation, teachers are asked to identify the general category into which one or more examples belong. Group 4 had the largest proportion of designating entries, asking teachers to give examples of a situation, or items in a set. Group 4 also asked the largest proportion of valuating questions, asking teachers to judge situations. Group 5, as in the other analyses, is neither highest or lowest in any category -- excepting being lowest in Directing and Managing Statements.

The expectation that asking teachers to think more carefully about their own experiences would make them more likely to alter their teaching, proved not to be true. An indication of the opposite -- that to make teachers change, the trainers should rely more on Describing entries asking teachers to give short, specific answers -- was indicated.

The analysis of the logic of the trainers' entry statements provides an insight into what the trainer expected of the teachers, both in response mode and in mental processing. This in turn provided partial explanations for the intervening processes leading the the teachers' changing their classroom behaviors.

CONTENT ANALYSIS

An analysis of content could provide the most useful data for a study of this kind. It would show what was really taught in the training groups, and it would show which content areas were stressed by those trainers who proved to be more effective in causing their teachers to change. The corollary to that is that the analysis of content would show which content areas of training were the most useful parts of training.

The form which catalogues the content areas to be tallied (see table 14) was developed empirically based upon the consultant's training of teachers. Recall that each Monday the trainer worked with the teachers in a workshop while the other trainers observed. The next day, those trainers worked with their own workshop teachers and covered the same material as the consultant. The consultant's workshop was determined to be the best source of categories since workshop exchanges often go beyond printed curriculum materials. Thus the catalogue for the first workshop was based upon the first Monday workshop of the training program. The catalogue for the second workshop was again based upon the consultant's second workshop, using the initial form and supplementing it with additional items as they were introduced in training. The catalogue for each workshop was developed in this way, building upon the items given for prior workshops.

The five observers used the forms to analyze the training tapes in sequence, so each trainer's workshop was analyzed within the same catalogue restrictions. Observers added additional items to the form when the content did not conform to the given catalogue items. The observers tallied each of the trainer's clauses or sentences under the appropriate item.

The observers were not formally trained, but they were made familiar with the catalogue items. They reported no difficulties in knowing where

table 14

TRAINER REFERENCE TO CONTENT CATEGORIES

freq. = the number of clauses or sentences said by the trainer which fall in the given category.

p. = this category's proportion of all the trainer's statements.

rank = the rank among trainers in the proportion of statements in this category.

	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5	A. THE WORKSHOP EXPERIENCE
freq.	100	116	35	155	265	A.1 Background in teacher effectiveness
p.	.04	.03	.02	.06	.11	research; general findings about edu-
rank	3	4	5	2	1	cation, student behavior; this training.
freq.	185	112	171	114	152	A.2 Trainer personal reactions and obser-
p.	.07	.03	.08	.05	.06	vations; "I" statements; discussion of
rank	2	5	1	4	3	today's workshop.
freq.	88	83	60	89	68	A.3 Instructions of what to do next in the
p.	.04	.02	.03	.04	.03	workshop.
rank	1.5	5	3.5	1.5	3.5	
freq.	448	276	139	331	306	A.4 Setting the workshop climate; stroking;
p.	.18	.08	.06	.13	.13	asking teachers, "What are you doing?";
rank	1	4	5	2.5	2.5	calling on teachers.
freq.	146	206	43	59	73	A.5 Review of prior workshops; report on
p.	.06	.06	.02	.02	.03	homework and other assignments; overview
rank	1.5	1.5	4.5	4.5	3	of future workshops.
freq.	197	236	169	91	166	A.6 Statement intended to alter teachers'
p.	.08	.07	.08	.04	.07	behavior; homework; what to do in their
rank	1.5	3.5	1.5	5	3.5	class that week; training other teachers.
freq.	146	117	252	215	172	A.7 Observation forms: Snapshot, Five Minute
p.	.06	.03	.12	.09	.07	Interaction (FMI), observation process
rank	4	5	1	2	3	itself.
freq.	112	222	111	172	115	A.8 Profiles; how to interpret profiles;
p.	.05	.06	.05	.07	.05	teacher's individual profile.
rank	4	2	4	1	4	
freq.	123	91	55	165	144	A.9 Workshop packets and materials.
p.	.05	.03	.03	.07	.06	
rank	3	4.5	4.5	1	2	
freq.	17	54	16	6	45	A.10 Doesn't conform to content mode: chatting,
p.	.01	.02	.01	*	.02	pleasant exchanges, jokes, etc.
rank	3.5	1.5	3.5	5	1.5	
freq.	36	37	49	29	24	A.11 Can't hear, discern.
p.	.01	.01	.02	.01	.01	
rank	3.5	3.5	1	3.5	3.5	
total	1598	1550	1100	1426	1530	
p.	.64	.44	.50	.57	.65	
rank	1.5	5	4	3	1.5	

- continued -

*proportion is less than .01

table 14 continued

TRAINER REFERENCE TO CONTENT CATEGORIES:

	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5	B. STRATEGIES FOR TEACHING READING
freq.	13	31	4	6	11	B.1 Clarity; give clear instructions.
p.	.01	.01	*	*	*	
rank	1.5	1.5	-	-	-	
freq.	5	52	5	0	22	B.2 Variety; use a variety of materials,
p.	*	.01	*	*	.01	activities.
rank	-	1.5	-	-	1.5	
freq.	66	24	30	57	32	B.3 Individual differences; assess student
p.	.03	.01	.01	.02	.01	levels; use different techniques with
rank	1	4	4	2	4	different student ability levels.
freq.	12	81	29	4	10	B.4 Personalize instruction; make instruction
p.	*	.02	.01	*	*	appropriate to each child; individualize
rank	-	1	2	-	-	within groups.
freq.	18	90	25	10	42	B.5 Whole group instruction, small group
p.	.01	.03	.01	*	.02	instruction are recommended, not indi-
rank	3.5	1	3.5	-	2	vidualized instruction.
freq.	9	8	4	29	26	B.6 Short quizzes, test taking, are recom-
p.	*	*	*	.01	.01	mended.
rank	-	-	-	1.5	1.5	
freq.	9	2	5	9	8	B.7 Practice drill; oral drill are recommended.
p.	*	*	*	*	*	
rank	-	-	-	-	-	
freq.	5	12	3	12	16	B.8 Discussion; review; students presenting
p.	*	*	*	*	.01	material.
rank	-	-	-	-	1	
freq.	24	15	15	0	0	B.9 Reading; focus on teaching reading.
p.	.01	*	.01	*	*	
rank	1.5	-	1.5	-	-	
freq.	37	46	42	37	39	B.10 Reading aloud; students and teacher
p.	.01	.01	.02	.01	.02	reading aloud, not silent reading are
rank	4	4	1.5	4	1.5	recommended.
freq.	4	5	7	0	1	B.11 Vocabulary; teaching vocabulary.
p.	*	*	*	*	*	
rank	-	-	-	-	-	
freq.	84	46	6	118	15	B.12 Teaching reading in content areas -
p.	.03	.01	*	.05	.01	science, mathematics, etc.
rank	2	3.5	5	1	3.5	
freq.	8	37	0	95	6	B.13 Teaching students to follow directions,
p.	*	.01	*	.04	*	use books, charts, graphs.
rank	-	2	-	1	-	
freq.	11	24	30	3	2	B.14 Readability formulas: CLOZE test, sight
p.	*	.01	.01	*	*	vocabulary test.
rank	-	1.5	1.5	-	-	
total	305	468	205	380	230	
p.	.12	.13	.09	.15	.09	
rank	3	2	4.5	1	4.5	

- continued -

table 14 continued

TRAINER REFERENCE TO CONTENT CATEGORIES:

	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5		
						C.	CLASSROOM MANAGEMENT
freq.	89	178	63	49	101	C.1	Organization; be organized and reduce
p.	.04	.05	.03	.02	.04		classroom management time; planning;
rank	2.5	1	4	5	2.5		record keeping; distributing materials.
freq.	27	76	43	14	36	C.2	Use of time; allocation of time to each
p.	.01	.02	.02	.01	.02		activity; get on task; avoid off-task
rank	4.5	2	2	4.5	2		behavior.
freq.	9	12	28	8	12	C.3	Task involvement; "Time on Task."
p.	*	*	.01	*	.01		
rank	-	-	1.5	-	1.5		
freq.	13	3	1	12	38	C.4	Academic Learning Time (A.L.T.): students
p.	.01	*	*	*	.02		are "engaged" or on task and working at
rank	2	-	-	-	1		an 80% success rate.
freq.	9	4	88	64	11	C.5	Forming groups and organizing group
p.	*	*	.04	.03	*		activities.
rank	-	-	1	2	-		
freq.	26	5	17	13	31	C.6	Intrusions, try to reduce them; intercom.
p.	.01	*	.01	.01	.01		
rank	2.5	5	2.5	2.5	2.5		
total	173	278	240	160	229		
p.	.07	.08	.11	.06	.10		
rank	4	3	1	5	2		
						D.	BEHAVIOR MANAGEMENT
freq.	7	97	4	18	23	D.1	Student involvement; causing more student
p.	*	.03	*	.01	.01		responding; calling on all the students;
rank	-	1	-	2.5	2.5		oral responses.
freq.	45	120	65	78	16	D.2	Praising and supporting.
p.	.02	.03	.03	.03	.01		
rank	4	2	2	2	5		
freq.	12	27	12	1	17	D.3	Positive interactions; interactions,
p.	*	.01	.01	*	.01		smiling.
rank	-	2	2	-	2		
freq.	9	17	11	139	34	D.4	Motivating behavior; making students feel
p.	*	*	.01	.06	.01		interested, successful; avoiding negative
rank	-	-	2.5	1	2.5		statements; clarifying values.
freq.	27	10	4	26	15	D.5	Socializing and social statemements are
p.	.01	*	*	.01	.01		to be avoided by the teacher.
rank	2	-	-	2	2		
freq.	44	213	317	31	39	D.6	Behavior Management; disciplining; be-
p.	.02	.06	.15	.01	.02		havior statements.
rank	3.5	2	1	5	3.5		
total	144	484	413	293	144		
p.	.06	.14	.19	.12	.06		
rank	4.5	2	1	3	4.5		

- continued -

table 14 continued

TRAINER REFERENCE TO CONTENT CATEGORIES:

	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5	E. FEEDBACK AND DIRECT INSTRUCTION
freq.	1	8	0	1	16	E.1 Enthusiasm; be enthusiastic, excited,
p.	*	*	*	*	.01	involved.
rank	-	-	-	-	1	
freq.	0	38	6	19	16	E.2 Questioning; use a variety of questions;
p.	*	.01	*	.01	.01	how to ask questions.
rank	-	2	-	2	2	
freq.	20	17	26	26	8	E.3 Direct questions are recommended.
p.	.01	*	.01	.01	*	
rank	2	-	2	2	-	
freq.	14	57	51	16	44	E.4 Clarifying questions are recommended.
p.	.01	.02	.02	.01	.02	
rank	4.5	2	2	4.5	2	
freq.	56	110	18	37	52	E.5 Interactive instruction is recommended,
p.	.02	.03	.01	.01	.02	not teacher working alone.
rank	2.5	1	4.5	4.5	2.5	
freq.	33	173	31	24	50	E.6 Instruction and explanation; direct in-
p.	.01	.05	.01	.01	.02	struction; academic and content focus.
rank	4	1	4	4	2	
freq.	61	61	25	36	18	E.7 Giving feedback is recommended.
p.	.02	.02	.01	.01	.01	
rank	4.5	4.5	2	2	2	
freq.	21	121	10	11	1	E.8 Making assignments and giving homework.
p.	.01	.03	*	*	*	
rank	2	1	-	-	-	
freq.	26	107	40	38	15	E.9 Correcting and guiding; correction; telling
p.	.01	.03	.02	.02	.01	the student that he or she is wrong.
rank	4.5	1	2.5	2.5	4.5	
freq.	10	4	10	6	10	E.10 Written assignments in class are not
p.	.01	*	*	*	*	recommended.
rank	1	-	-	-	-	
freq.	6	36	10	24	8	E.11 Monitoring written work is not recom-
p.	*	.01	*	.01	*	mended.
rank	-	1.5	-	1.5	-	
total	258	732	227	238	238	
p.	.10	.21	.10	.10	.10	
rank	3.5	1	3.5	3.5	3.5	

to mark the tallies of the analysis. Each observer listened to only one workshop of any one trainer, thus observer bias is evenly distributed across trainers.

Similar to the findings in the citation analysis, items which changed for each group of teachers, shown in table 4, when compared to discussion of the same item in the content analysis bore no noticeable relationship. The only exception to this was Group 2. In this group, the classroom FMI variable, Intrusion, increased, which was not supposed to happen. In the content analysis, Group 2 ranked last in discussing intrusions and how to cope with them. Among the Snapshot variables of table 4, Group 2 teachers made significant change in two of the variables, and the Group 2 trainer also ranked highest in discussing these items, which were Making Assignments and Student Uninvolved.

A broader view of the items in the content analysis compared to the overall ranks of the groups provides some useful information. Recall that the group ranks are Group 1 - rank 4; Group 2 - rank 2 ; Group 3 - rank 3; Group 4 - rank 5, and Group 5 - rank 1.

Among the Workshop Experience categories, several points are worth noting. Item A.4, which calls on teachers to relate their experiences and includes stroking, is apparently not a recommended trainer behavior because the two top local trainers, Groups 2 and 3, were the lowest ranked. For another item, A.6 in which trainers give homework or try to change teacher behavior, Group 4 had the lowest proportion, about half of the other trainers. This may provide a clue as to why Group 4, which is similar to the other training groups on other measures, resulted in the least teacher change: The trainer may not have tried as hard to change the teachers' behavior. And item A.10, the category of general frivolity and gaiety, ranked Groups 2 and 5 the highest. If there is a relationship

between having fun and changing behavior, it could represent an acceptance of one another, a camaraderie, or a recognizing of the difficulties facing teachers without being overwhelmed by them. In the total of the Workshop Experience categories, Groups 2 and 3 spent the least proportion of statements; apparently, they put their emphasis on the content of training, not on the communication processes and structure of the workshop.

Among the Strategies for Teaching Reading, Groups 2 and 3 ranked the highest on B.4 personalizing instruction and B.14 readability formulas, Groups 3 and 5 on B.10 reading aloud, and Groups 2 and 5 on B.2 using a variety of materials and B.5 group instruction. The important observation about B.5 is that it also placed Group 4 in the bottom rank. This is probably one variable which is key for teachers who will be measured by the SRI Secondary Observation Instrument.

Two items appear to fall in the "what not to do" column. On these, the three top ranked groups were the lowest in discussing this material in their workshops. The items were B.3 assessing and teaching to student ability levels, and B.12 teaching reading in the content areas. Group 4 spent a lot of time discussing B.12, but the emphasis didn't appear to encourage teachers to change the ways they were teaching. Examining the totals for this area, it doesn't seem that emphasis on Strategies for Teaching Reading is that useful in changing teachers' behaviors.

The area of Classroom Management is different. Here the rankings on the categories closely match the group ranks of teacher changes. Specifically, the items which rank Groups 2, 3 and 5 the highest and Group 4 the lowest are C.1 organization, C.2 careful use of time, and C.3 time on task. C.6 intrusions has been noted earlier for Group 2.

In the general and specific category of Behavior Management (D.6) Groups 2 and 3 take a leading role. The emphasis and concentrated discussion on how to deal with behavior and discipline problems may have proven to be very useful to the teachers. The study of trainer citation found a similar relationship for the variable, All Behavior Statements. The other important category in this area is D.3 positive interactions, which singled out the three top groups.

The findings under the area, Feedback and Direct Instruction, are generally ambiguous; although judging by the total, Group 2 chose to put a much greater emphasis here, and Group 2 is the only one to significantly change the structure of the classroom situation as illustrated in the Snapshot. Group 2 ranked first on E.2 questioning, E.4 using clarifying questions, E.5 using interactive instruction, E.8 making assignments, E.9 correcting and guiding, and E.11 avoiding monitoring. The one item which identified the three top groups was E.4 emphasis on using clarifying questions.

In the methods employed in this content analysis, a comparison of ranks, simple probability would indicate that the ranking of some of the items would correspond to any given ranking of the groups. However, there was a pattern to the items which matched the ranks, and there was some logic to why those items fell as they did. A replication of this analysis with a similar training program would be a valuable validation of the findings reported here. This analysis should be most useful to those who plan training groups and to trainers of teachers by identifying which areas should be stressed and which deemphasized.

CONCLUSION

Observers as they listened to the workshop tapes made personal comments about other characteristics they had noted about the different training styles. In retrospect, some of these comments could provide valuable clues to the true dimensions separating the truly effective training approaches from those which are not as effective. What this indicates in terms of this study is that a fifth analysis was needed, that of the observer participant - the person who just listens and makes notes about what he or she hears and how that might serve to encourage teachers to change.

Some of the observers' comments and other information about these training groups might be useful in presenting a more complete picture of each trainer and her set of teachers. Another note in passing is that all the trainers received very high ratings from the teachers on all the workshop feedback forms, and this strong positive feeling about the training persisted and was reported again in an evaluation a year later.

Group 1 had only three teachers, which may have altered the trainer's role since she was among friends. More significantly, however, was the fact that one of her teachers had a class of academically advanced students, thus many of the variables of training were not appropriate for change, and some workshop discussion had to be devoted to discussing the exceptions to the rules. One observer commented that Group 1 seemed to do a lot of reinforcing of what the teachers were already doing and what they thought. The B. O. Smith analysis picked this up in the Opining category.

Group 2, as noted by two observers, had a lot of joking and laughing. This was also found by the Content Analysis. This trainer made one important statement from the perspective of changing teacher attitudes and behavior: In discussing the criterion as a goal for teachers on one variable she said, "The criterion is 50, but you are all so good, that we are going to try for 70."

In Group 3 during the workshop in which teachers reported on their experiences trying to improve two variables in their classrooms, this trainer devoted a large amount of time to these reports -- what the teachers had tried and how it had worked. The message of this emphasis was that the teachers were expected to try to change, and that they would be held accountable to the group for what they tried.

The Group 4 trainer was described by one observer as a counselor type who used a lot of stroking. On many of the measures of this study Group 4 fell in the middle of the ranges, yet these teachers changed the least. The clue may be in some of the comments early in training. The trainer asked teachers to introduce themselves and in so doing to state what they "would be able to contribute to the training." This is a good technique for causing people to support a program but not for inducing them to change. At another point the trainer reminded them that they were "the cream of the crop." Again, it's reinforcing, but may not encourage them to change. The clue may be something more direct, however -- just a simple mistake in bringing about attitude and behavioral change: During the workshop in which the teachers were to select two variables to work on that week, the trainer did not require that they state publicly which variables those would be. A public commitment to change is an important incentive to cause people to change. In terms of available time in a time-on-task model, Group 4

was the shortest. One workshop was cut short by bad weather, and when another workshop had to be made up, it took place in a school in which the intercom boomed every ten minutes (so it seemed), and recess seemed to take place in the same room with the tape recorder. The conditions were not conducive to good training and the workshop was cut short.

Group 5 was trained by the consultant; eleven teachers participated while the four other trainers, who were also supervisors to these teachers, observed from the back. One observer commented that this trainer seemed to be "straight out of Flanders," which might be valid if based on the high proportion of teacher talk in this training. The consultant had her comments most strongly grounded in the research, as verified by the Content Analysis, and she also strongly encouraged the teachers to change. In the final workshop she kept reminding the teachers that after the post observations, there would be a follow-up meeting at which time she could see how well they had all done. They responded since as a group they changed on the post observations the most.

In assessing the relative contributions of the four methods of observation used in this study, some of the basic assumptions underlying the ranking of the groups come into question. The magnitude of change based upon an analysis of covariance was used. The problems of covariance were generally controlled by the use of rank equivalents. No reference was made to whether some variables might be more significant than others.

This method took no recognition of the variables which significantly changed within each training group and no recognition that Group 2 was the only group to change the Snapshot variables. An assertion of this

paper, as yet unverified, is that the change in the Snapshot variables indicates that the teachers have restructured their classrooms and have allotted different proportions of time to activities.

An examination of results of the four analyses for Group 5, which ranked highest in teacher change, shows that Group 5 remained undistinguished except in having the greatest proportion of teacher talk. This group fell in the middle of the pack on many of the measures. This trainer was the consultant, the model for other trainers. It would be interesting to discover if the master trainer in fact usually models the typical behavior of training rather than an extreme behavior. Perhaps the magnitude of teacher change was due to the effects of the prestige of the consultant herself, not due to her methods, style or content of training.

If it is accepted that the change in the teachers in Group 5 was due to the training methods of the consultant, then these four methods of analysis (except Flanders on percentage of teacher talk) were not able to distinguish those effective training techniques. On the other hand, if it is accepted that something beyond the scope of these methods caused the teacher change, namely the effect of the consultant's prestige, then the four methods can present a strong picture of the most effective training model for teacher change.

This picture of an effective training model, specifically Group 2, must be coupled with the assumption that the Snapshot variables were measuring the true order of change. The model for effective training which emerges and is partially verified by having characteristics similar to Group 3 but dissimilar to Group 4 is: From Flanders, a trainer who does most of the talking, has frequent exchanges with the teachers and uses a lot of praise; from the Trainer Citation, a trainer who stresses

the content of training by making frequent reference to the variables on which the teachers will be observed; from the B. O. Smith Analysis, a trainer who wants short answers focused on the discussion without much elaborating or giving opinions, and from the Content Analysis, a trainer who de-emphasizes Workshop Experience categories, but stresses certain categories within Strategies for Teaching Reading, Behavior Management, Classroom Management and especially Feedback and Direct Instruction. The trainer also laughs a lot.

The different observation methods each made a contribution to understanding the most effective model for teacher training. The most accurate predictor of resulting teacher change was the total number of Trainer Citations of the Observation Variables, but the framework for the model, the structure of the trainer's interactions, relied upon the Flanders matrix. B. O. Smith's analysis gave a glimpse into the processes that take place between the trainer and teachers and how a teacher is induced to change, and finally, the Content Analysis identified those areas of training which appear to be most useful to teachers to enable them to change their teaching behaviors. Each analysis made its own distinct, yet complementary contribution to developing a model for effective teacher training.

BIBLIOGRAPHY

Amidon, Edmund J., and Ned A. Flanders, The Role of the Teacher in the Classroom. St. Paul, Association for Productive Teaching, 1971.

Brennan, Robert L., Elements of Generalizability Theory. The American College Testing Program, 1983.

Gage, N. L., "Paradigms for Research on Teaching." Handbook of Research on Teaching. Chicago, Rand McNally, 1963, pp. 94-141.

Krippendorff, Klaus, Content Analysis: An Introduction to Its Methodology. Beverly Hills, Sage Publications, 1980.

Kryspin, William J., and John P. Feldhusen, Analyzing Verbal Classroom Interactions. Minneapolis, Burgess Publishing Company, 1974.

Medley, Donald M., and Harold E. Mitzel, "Measuring Classroom Behavior by Systematic Observation." Handbook of Research on Teaching, Chicago, Rand McNally, 1963, pp. 247-327.

Smith, B. Othanel, A Study of the Logic of Teaching. Washington, D. C., U. S. Office of Education, 1959 (ERIC 015 064).

Stallings, Jane, "Allocated Academic Learning Time Revisited, or Beyond Time on Task." Educational Researcher, (December 1980), pp. 11-16.

IMPACT OF TEACHER USE OF TIME TRAINING ON STUDENT ACHIEVEMENT

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Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada, April 1983

ACKNOWLEDGEMENTS

We would like to extend our thanks to the many people in the District of Columbia Public Schools who assisted us in this study. First, thanks to J. Weldon Greene, Director of the Division of Program Development and Planning, for making the program and this study possible. Also from the the Division of Program Development and Planning, Sandra Lee Anderson, who acted as a major driving force in this research and assisted in the conceptualization of the study, and Roger J. Fish, who provided administrative support. Integral to our data specification and collection efforts were psychometrists, Susie D. Hester, Region A; Grace Chen, Region B; Virginia A. Griffin, Region C; and Patricia Brady, Region D. Also, counselors, Doris B. Jackson at Lincoln Junior High School and Lydia D. Colston at Hart Junior High School, assisted in data collection. Last, but certainly not least, the Instructional Supervisors responsible for conducting the Academic Learning Time programs assisted us in innumerable ways. Specifically, Merle M. Bush, Region C, assisted in data specification and collection as well as in our conceptualization of the program. Lola H. Lecounte, Region A; Barbara J. Quick, Region B; and Geraldine W. Bethune, Region D, assisted with data collection. Many other persons, too numerous to name - principals, assistant principals, and other school personnel - played a helpful role in this research. To them also, we extend our thanks and appreciation.

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Introduction

It is a very straightforward and commonsensical notion that the more time one devotes to an endeavor, the more success one is likely to experience with it. In order to progress on the piano, one must spend time practicing. In order to become a better reader, one must spend time on reading instruction and activities.

One might easily assume that teachers are well aware of this obvious relationship and that they keep their students academically engaged for uniformly high percentages of the time available in school. Research, however, has not borne out this assumption. Borg (1980) has noted a wide variability in the amount of time that is allocated for academic instruction and in the amount of time students are actually engaged in academics while in the classroom.

Studies of the relationship between time spent on academic tasks and achievement (Bloom, 1974; Denham & Lieberman, 1980; Good & Beckerman, 1978) have shown evidence in support of the common sense notion that more time on task equates with greater achievement for the great majority of students.

Kounin (1970) and Brophy and Evertson (1974) have researched and

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chronicled the relationships between various classroom management variables and student time on task. Borg (1980) noted that a great deal of evidence supports the notion that classroom strategies affect time on task, which in turn, affects achievement gains. What is needed next, he concludes, is to test programs for training teachers to manage their classrooms so as to increase student time on task.

This study provides one such test. The training researched here is a variation of Stallings' Process of Teaching Basic Reading Skills in Secondary Schools (1979), which shall be referred to hereafter as Academic Learning Time (ALT) training. Stallings' ALT training was developed through a study of secondary school remedial reading classes in six northern California school districts. The study showed that students made greater reading achievement gains in classrooms where teachers spent more time instructing, providing supportive feedback and having students read aloud. These successful teachers were closely involved with their students during the entire class.

The program consists of pre-training observations which provide feedback to participating teachers about their need for improvement on classroom behavior variables (see Appendix for variables) that Stallings (1979) found to be related to achievement in secondary level reading classes. Five weekly workshops, two and one half hours each, follow. In the workshops, teachers discuss and commit to work on classroom behaviors and strategies needing improvement, as pinpointed in the observation profiles. One month after the training ends, post-training observations are conducted. The resulting observation profiles are then presented and discussed in a final workshop.

This in-service training, with one important difference, was presented in the Washington D.C. Public Schools in November through January of the 1981-82 school year. The difference between the original Stallings program and the one produced in the D.C. Public Schools lies in the target audience and the assumptions underlying its selection. The D.C. target audience consisted of junior high school teachers of English, science, social studies, mathematics and reading - all of whom are responsible for helping to improve students' reading achievement scores. The assumption in the D.C. Public Schools was that ALT training would be effective in increasing student reading achievement scores even if given to only one of a student's content area teachers

Besides strategies to teach reading, the ALT program also teaches many strategies that are related to general teaching effectiveness. It is therefore likely, that where the program is implemented in content areas other than reading, increased student performance in those content areas will occur. In fact, when one considers the original study as having been conducted in the area of reading, it seems even more likely that content area achievement for students whose content area teachers were trained would be affected rather than reading achievement for students of all trained teachers.

Purpose

The purpose of this study was to determine the impact of ALT training on student reading achievement. Also of interest was the impact on content area scores of students whose content area teachers were trained. The difference in results obtained on reading scores and on content area scores when using an analysis of variance of gain scores and when using pre-training achievement test scores as the covariate in an analysis of

of covariance was also investigated. Finally, the study investigated the relationship between the level of teacher implementation of the training and student achievement.

Methodology

Sample

The sample consisted of 29 junior high school teachers (16 trained and 13 untrained teachers*) and the students from one of each of the teachers' classes (N=613). The teachers came from all four regions of the D.C. Public School system. The students had wide ranging cultural and socio-economic backgrounds, as well as varying levels of achievement.

Although 29 teachers were actually trained, only 16 were included in this study. Nine seventh grade teachers were excluded because achievement test scores were not available for their students. Three ninth grade teachers were excluded because each was the sole trained teacher in his or her content area. Teachers participating in training were predominantly volunteers but included a few who were required or asked to participate by their principals. Each teacher in training chose one class in which to apply what she was learning in the training. These classes were chosen for convenience to the trainer/observer for conducting observations.

Non-trained teachers were chosen to match trainees on grade and subject taught within each participating school. In two instances involving algebra teachers, comparison teachers from different schools had to be used because there was only one algebra teacher per school.

Instrumentation

Teacher behavior was measured using the Secondary Observation Instrument

* No comparison teachers were provided for three of the trained teachers.

(SOI). The SOI was developed at SRI International by Jane Stallings and Margaret Needels. It is teacher-focused and designed to be sensitive to different kinds of instructional methods, teacher-student interactions and classroom environments. It provides indices of teacher functioning on 31 variables which reflect positive and negative instructional behaviors. (A sample of a teacher observation profile with results derived from observations of one teacher is presented in the Apppendix.) All variables are defined with respect to a specified criterion. It is these variables that served as the focal point of the training.

In defining teacher level of implementation (L) on the SOI, the following formula was applied. L - the sum of scores (across all SOI interaction variables except All Academic Statements - an aggregate variable, and Praising Interaction, which was not scored) of the number of points below criterion on positive variables and above criterion on negative variables. Negative variables are those variables which are negatively related to student achievement and positive variables are positively related to student achievement. A high score on this scale indicates a low level of implementation while a low score indicates a high level of implementation.

Student performance was measured using the Comprehensive Tests of Basic Skills (CTBS) (levels 3 and 4, Form S). The tests were administered during the implementation of the D.C. Public Schools city-wide testing programs in May 1981 and May 1982. The 1981 data was used as the pre-test or pre-training achievement data while the 1982 data was used as the post-test or post-training achievement data. Test data were collected from the regional offices and from the schools. In this study all raw scores were converted to standard scale scores.

Procedure

The training program consisted of a pre-training observation period, five two and one-half hour workshops (no more than one per week over seven weeks), a post-training observation period, and a follow-up workshop to discuss post-training observation profiles. Both the pre- and post-training observations included two to three observation visits over the course of three weeks. They were conducted by four school district instructional supervisors (who were chosen to become trainers) with the assistance of several central office program personnel. Due to resource constraints, observations were conducted only on the trained teachers, and not on the comparison group. All observers were trained and certified by an associate of Jane Stallings. The observation training consisted of seven days of discussion about coding standards, drill and practice, and both written and "hands on" testing. Eighty-five per cent (85%) reliability between the observer-in-training and the observation trainer was required for certification upon completion of observation training.

The workshops were conducted at the end of the school day in a central location. The master trainer conducted her workshop for a small group of teachers on one day as the apprentice trainers observed her. On the following afternoon, the master trainer met with the apprentices to discuss workshop content and process. Following this meeting, the four apprentice trainers each lead a workshop session for a small group of teachers from their respective regions.

The workshops present the research background of the ALT training and a review of each trainee's observation behavior profile. Each trainee was asked to make a commitment to work on behaviors identified in her profile as

needing improvement. Workshop discussions centered on topics such as direct instruction, providing feedback, interactive instruction and behavior management.

Evaluation Questions

The questions raised for this evaluation were as follows:

1. Is there an effect of training on student reading performance?
2. Is there an interaction effect of training and trained teachers' content area on reading performance?
3. Is there an effect of training on the math, science, and social studies performance of students whose math, science, and social studies teachers respectively, were trained?
4. Is there a relationship between teacher level of implementation and student reading performance?
5. Is there a relationship between the math, science, and social studies teachers' level of implementation and student math, science, and social studies performance, respectively?
6. Is there a difference in findings when using an analysis of covariance procedure and when using the gain score approach?

Design for Analysis

For the analysis of the effects on student performance, the design used was the pretest-posttest comparison group design with training and content area as factors.

Statistical Analyses

Evaluation questions 1 and 2 were analyzed using analysis of covariance with the reading pre-test scores as the covariate (N=441).

Evaluation question 3 was modified. There was very little CTBS data on science and social studies. Thus no analysis was performed on these content areas. An analysis of covariance however, was conducted on the math data, using the pre-test math scores as the covariate (N=120).

Evaluation question 4 was analyzed using the Spearman Rank-order correlation procedure to measure the relationship between teacher level of implementation and class mean post-test reading score (N=16).

Evaluation question 5 was not answered due to an insufficient number of math, science, and social studies classes.

To answer question 6, evaluation questions 1, 2 and 3 were reanalyzed using an analysis of variance of gain scores (reading scores for questions 1 and 2 and math scores for question 3). The unit of analysis was student (N=613). There were 613 students in the analysis of the reading scores and 178 in the analysis of the math scores.

The analyses of program effects on student performance were performed using the SPSS MANOVA program. This program was selected because it controls for unequal cell sizes and analyzes the variance arising from the complex nesting in this study.

Results

There were no significant effects for the analyses with reading scores as the dependent variable. This was upheld for both procedures - the analysis of covariance and the gain score approach. There were also no significant effects for the analyses with math scores as the dependent variable. Again, this was true of the two procedures used.

There was no relationship demonstrated between teacher level of implementation and student reading performance.

Interpretation of Findings and Discussion

Before making firm conclusions about the lack of effectiveness of the

program, a number of factors about the nature of the adaption of the ALT program and about the quality control implemented, need to be considered.

It is important to note that in the first year of adaption of the training program, there was limited concern with program effects on students. The focus was on changing teacher behavior to meet the criteria established on the SOI, and on providing school system personnel with skills that can be passed on, "pyramid style", to other teachers (Bush, 1983). The objective of changing teacher behavior was met, judging from the post-observation scores on the SOI, teacher responses to a Levels of Use (LoU)* interview (Prom and Williams, 1982) and to a questionnaire administered one year after training (Bethune, 1983).

Why then the lack of effect on student performance if teacher change actually occured? Several limitations of this study as well as idiosyncracies of the program may be responsible.

The first limitation is in the assumed difference between the treatment and comparison teachers. There was no observation of the comparison teachers to find out the degree to which their bahaviors were different from those of the trained group. A most important finding derived from the analysis of the responses of a randomly selected group of nine trained teachers to the LoU interview was that they all conducted staff development workshops on the components of ALT in their respective schools. This evidence strongly suggests a contamination of the comparison teachers. Recall that these were teachers who came from the same school as the trained teachers. Stricter

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* The Levels of Use (LoU) interview is a focused interview which seeks to determine behavioral adaptations made by individuals in the adoption of an innovative program. The interview protocol as well as the rating scheme were developed by Loucks, Newlove and Hall (1975).

controls should have been applied to avoid contamination of the comparison group.

Secondly, since the program was conducted in the middle of the school year, there was little time for teacher behavior changes to have an impact on student performance.

One other factor to consider in interpreting the findings is that the Stallings' ALT training is designed for use with low achieving students. For high achieving students, research reveals that attempting to increase time on task has a limited effect on their performance. This group normally manifests a high level of task involvement. In this study, students of varying achievement levels were included in the sample. The analysis, however, did not consider level of achievement as a factor. A design blocking on such levels might have provided a clearer picture of the effects of the ALT training on students. Such an analysis was not conducted as it would have further complicated the problem of unequal cells.

Recommendations for Future Evaluations

The following are recommendations for future program evaluations of ALT.

1. Allow a full year for implementation of the strategies learned.
2. Apply strong quality controls to ensure teacher use of the training components and to avoid contamination of the comparison group where a comparison group design is selected as the basis for data analysis.
3. Analyze the effects on students with varying levels of achievement.
4. In a situation such as that currently operating in the D.C. Public Schools where all or most teachers are exposed to the training or elements of it and where the training strategies are used with all students, a future evaluation study might seek to analyze the effect on students with varying levels of achievement.
5. Collection of data on students should begin at the time of program implementation if class lists and student scores are not computerized.

REFERENCES

Bethune, G. W. Academic learning time: The current status of the Stallings training. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, 1983.

Bloom, B. S. Time and learning. American Psychologist, 1974, 29 (9). 682-688.

Borg, W. R. Time and school learning. In C. Denham & A. Lieberman (Eds.), Time to Learn. Washington, D.C.: National Institute of Education, 1980.

Brophy, J. & Evertson, C. Process-product correlation in Texas teacher effectiveness study. Austin: University of Texas, Research and Development Center for Teacher Education, June, 1974.

Bush, M.M. The complexity of institutionalizing a program: Acquisition of training, observing and computing capability. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, 1983.

Denham, C., & Lieberman, A. Time to learn. Washington, D.C.: National Institute of Education, 1980.

Good, T. L. & Beckerman, T. M. Time on task: a naturalistic study in sixth grade classrooms. Elementary School Journal, 1978, 78(3), 193-201.

Kounin, J. Discipline and group management in classrooms. New York: Holt, Rinehart and Winston, 1970.

Loucks, S.F., Newlove, B.W. and Hall, G.E. Measuring Levels of Use of the Innovation: A manual for trainers, interviewers and raters. Austin: Research and Development Center for Teacher Education, University of Texas at Austin, 1975.

Prom, S.E. and Williams, S. The Evaluation of the Fidelity of Implementation of National Diffusion Network Programs adopted by the District of Columbia Schools, 1981-1982. Washington, D.C.: District Facilitator Project, District of Columbia Public Schools, 1982.

Stallings, J. A. How to change the process of teaching reading in secondary schools. Educational Horizons, 1979, 57(4), 196-201.

APPENDIX

BASIC SKILLS TEACHER PROFILE

VARIABLES	CRITERION	PRE OBSERVATION RESULTS	POST OBSERVATION RESULTS	CHANGES
All Academic Statements	80.00	92.2	92.3	
Teacher Instructs/Explains	25.00	30.3	11.3	
Teacher Asks Direct Questions	8.00	28.5	13.8	
Teacher Asks Clarifying Questions	3.00	0	1.7	
Teacher Calls Upon Different Students	6.00	6.0	8.5	
Student Respond	8.00	2.4	15.4	
Teacher Praises or Supports	4.00	4.7	7.9	
Teacher Corrects	4.00	5.8	2.1	
Teacher Corrects and Guides	2.00	3.3	1.6	
Students Read Aloud	12.00	0	12.7	
Teacher Reads Aloud	10.00	0	0.3	
All Organizing or Managing Statements	12.00	7.7	7.3	
Teacher Working Alone	5.00	3.4	0.4	
Teacher Monitoring Written Work	5.00	12.9	7.1	
All Behavior Statements	3.00	2.8	0	
All Social Statements	2.00	0	0	
Intrusion	.00	0	1.1	
Positive Interactions	2.00	0	2.0	
Negative Interactions	.00	0	0	
Praising Interactions	2.00			

SNAPSHOT
SUMMARY REPORT 1
STUDENT INVOLVEMENT IN TASKS

	CRITERION	PRE OBSERVATION RESULTS	POST OBSERVATION RESULTS	CHANGES
Reading Silently	15.00	0	0	
Reading Aloud	6.00	0	13.6	
Making Assignments	10.00	0	10.8	
Instruction/Explanation	25.00	42.0	26.8	
Discussion/Review Assignment	10.00	34.4	23.5	
Practice Drills	4.00	0	0	
Written Assignments	20.00	20.0	13.6	
Taking Test/Quiz	5.00	0	0	
Non-Math/Reading Instruction	.00	0	0	
Social Interaction	.00	0	0	
Student Uninvolved	.00	3.5	0	
Being Disciplined	.00	0	0	
Classroom Management	5.00	0	0	

EFFECTIVENESS OF STALLINGS' USE OF THE TIME TRAINING FOR TEACHERS IN WASHINGTON, D. C.

A Critique of the Montreal Symposium

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The Academic Learning Time program in the District of Columbia, as shown by the presentations here, is especially important because of the wedding, so to speak, of training with research within the school system itself. So often research is conducted by an outside agency, and the opportunity for immediate information and feedback to the school system itself is lost. It is important to build into the school system the process of researching its own activities as they are conducted.

In critiquing these presentations, I would like to begin with the last one which studied the impact of the training as measured by student achievement and then work sequentially to the first presentation. The lack of impact on student achievement as reported in the paper by Thieme-Busch and Prom is indicative of research in a non-laboratory setting. As we know, a laboratory setting controls variables allowing a focus on the changes under investigation, but when this study is transferred to an actual school situation, the complexities of schooling often make it impossible to discern the impact of a training program.

A recent study reported in the Journal of Staff Development (1983) utilized an ethnographic methodology to determine if in fact the training provided to the teachers in the inservice settings transferred to the classroom. The issue of transferability to the classroom would need to be confirmed prior to a review of student achievement scores.

Another problem is that of time. December to May is too short a period for teachers to internalize the content of training. We have found that six months at a minimum are required for teachers to adopt the training practices and for these new teaching habits to be measurable through any assessment of student achievement.

About the Anderson paper, it is important to look at the effect of the different training groups in the classroom and to compare those differences. One variable which should be studied more thoroughly is group size. We have found that groups need to be of a size of six to twelve persons. The paper did allude to the role of the facilitator/consultant (Group 5) and the factor of "expert impact" as the explanation for the greatest amount of teacher change.

The idea of using four different approaches to observe the training tapes is a worthy one that produced some interesting findings.

Studies using Flanders' Interaction Analysis usually require observers to train at least twelve to thirty hours to achieve the needed proficiency. The paper doesn't indicate the total number of hours that the observers trained; although the reliability is certainly sufficient.

One of the findings of the paper is the possible effect of the use of humor in training. Group 2, the local trainer group with the greatest teacher change was mentioned as having a lot of joking and laughing. I recommend a review of the literature in the area of humor for adult learners. Tel Aviv University Department of Education has been conducting extensive research in this area for a few years. I also suggest reading an article in the Journal of Classroom Interaction, Vol. 14, No. 1, written by W. Robert Houston and others which examined the effects of process verses product training for adults.

The presentation by Bush outlines a new longitudinal program for establishing a developmental in-service training program. It makes a major contribution in examining the costs weighed against the benefits. One of the main costs, which is largely overlooked in cost/benefit studies, is that of freeing the necessary staff to do the work. I would also suggest that cost/benefit ratios be computed using not only benefits for the teachers but also benefits for the students.

In the Bethune presentation note that we are talking about research on basic skills. Today, in contrast to ten years ago, the impact of research is very different. Now there is a very fast turnover between research and the application of research, as shown by the Academic Learning Time program in the District of Columbia which is based upon research conducted by Stallings and others within the last decade.

The key to effective instruction may be sought in part in studies such as large groups verses small groups, or lecture verses individualized instruction. The important factor, however, is the interactive nature of the teacher-student relationship.

The overall A.L.T. symposium presented today illustrates the importance of a support group for the success of a program. Support was shown by availability of school system resources, teacher participation after school and by the release of supervisors from other responsibilities to conduct the program.

The program should conduct a study of the Level of Use of this innovation to determine the various implementation stages of the teachers and to learn if the teachers need some follow-up to the training (Journal of Teacher Education, Vol. 26, No. 1 by Hall and others). Our studies have

generally found that if teachers don't receive some type of reinforcement or review, there is a general fade-off of the effect of the program.

It would be useful to use the Secondary Observation Instrument a year later, rather than to have just an evaluation survey with self-report data.

I commend what the District of Columbia is trying to do with its A.L.T. program.